

REPORT OF THE  
"COMMITTEE ON RURAL ELECTRIFICATION IN EASTERN STATES"



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## FOREWORD

It has now been recognised that Social Revolution in the country can be brought about only by extensive rural economic development, which in turn depends, to a large extent, on extensive rural electrification so as to provide the basic infra-structure for the same. Eastern States, particularly the small North-Eastern States, have since long, due to various reasons, remained backward in the matter of rural electrification. This may be the major, if not the only reason, for the present economic backwardness of their rural areas and their low agricultural and rural industrial development. The position is particularly alarming because, these States contain a high percentage of tribal population and quite a substantial area is hilly with difficult terrain and is sparsely populated. This regional imbalance has been brought to the notice of the Government of India in various forums, including the Parliament.

In 1968, the Government of India set up a Committee of Members of Parliament, under the Chairmanship of the then Union Deputy Minister of Irrigation & Power, to review the progress of rural electrification in the 9 backward States in whose case the percentage of villages electrified was below the all-India average. These States were Assam, Bihar, J & K, Madhya Pradesh, Nagaland, Orissa, Rajasthan, Uttar Pradesh and West Bengal i.e. all the major States of the Eastern Region were included. The Committee submitted its report to the Government of India in July, 1972, in which they had made several recommendations for increasing the pace of rural electrification in these backward States. However, the position has not improved, specially in the Eastern States. This is the reason why the Government of India set up the present Committee on rural electrification in Eastern States, in January, 1974.

The Committee have toured extensively in these areas and obtained information personally after having discussions with the State Government Officials and public representatives. I am happy that it has been possible to bring out the report of the Committee in time and for this I am thankful to all the Committee Members, who in spite of their busy engagement schedule, could find time for the work of the Committee.

The Committee would also like to place on record their appreciation and grateful thanks for the cooperation and facilities extended by the officers of the Planning Commission, Rural Electrification Corporation and those of the State Governments, State Electricity Boards, Gram Panchayats/Local Bodies and individual members of the public for assisting the Committee in their work and providing valuable information. Thanks are also due to the Director and staff of the Rural Electrification Directorate, Central Electricity Authority, but for whose initiative, sincerity, cooperation and devoted work, the preparation of this Report would not have been possible.

Siddheshwar Prasad  
Union Deputy Minister of Energy  
Government of India  
& Chairman  
Committee on Rural Electrification in  
Eastern States

New Delhi

March , 1975.

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## SUMMARY OF RECOMMENDATIONS

1. Intensive efforts should be made in all developmental sectors, so as to provide necessary infra-structure for power development. .... (6.2)
2. Some suitable agency may be created for coordinated development of Tribal areas of Bihar, Orissa, West Bengal and Madhya Pradesh. .... (6.2)

### Power Development

3. Urgent steps may be taken to utilise the full plant capacities of the existing power stations. .... (6.3.1)
4. Work on the power houses under construction should be expedited. .... (6.3.2)
5. Expeditious action should be taken for investigating and planning the thermal and hydro power potential in these states for phased exploitation. .... (6.3.3. & 6.3.4.)
6. Intensive efforts should be made for setting up micro-hydel units in remote and hilly areas of the North-Eastern Region. .... (6.3.5.)
7. The excise duty on diesel oil used for power generation may be waived off for these States. (6.3.5.)

### Transmission & Distribution System

8. Efforts should be made to expeditiously complete and commission the sanctioned transmission and distribution lines including inter-States lines. .... (6.3.6.)
9. Transmission systems of these States may be planned for long range power development. .... (6.3.6.)
10. For the entire North-Eastern Region, planning of transmission system should be done for the region as a whole. Suitable agency for planning and construction of transmission lines in this region may be set up. .... (6.3.6.)
11. Sub-transmission system in North Bihar, North Bengal and ~~North~~ Orissa may be strengthened. (6.3.6.)

### Load Promotion

12. Efforts should be made to change the agricultural pattern to avoid crop damage on account of floods and also to make use of <sup>↑</sup> and high yielding varieties of seeds. fertiliser... .... (6.4.1.)

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13. The migratory nature of the tribals should be arrested by providing them with fixed habitats and by encouraging them to practise cultivation at fixed places. .... (6.4.1.)
14. Industrial development should be expedited; particularly the industries based on locally available raw-materials, such as forest based industries and cottage industries etc. .... (6.4.2 & 6.4.4 )
15. In hilly areas, intensive development of agriculture, horticulture, pisciculture and animal husbandry should be done to suit the local conditions, so that the economic condition of the local masses improves. Efforts should also be made to develop tourism in these areas. .... (6.4.3.)
16. The mineral potential of these states may be assessed and long range programmes to exploit the same may be prepared. .... (6.4.5)
17. In coastal areas, the fishing industry may be revitalised. Tourist resorts can also be developed in these areas. .... (6.4.6)
18. Efforts to set up industries related to rural electrification may be made and also agro-industrial centres may be set up for maintenance and repairs of agricultural implements, irrigation pumpsets, motors etc. .... (6.4.7)
19. A Committee may be set up to examine in detail the problems relating to rural industrial development and make suitable recommendations. This Committee could also look into the load promotional aspects of rural electrification. .... (6.4.7)
20. Efforts should be made to remove the complaints of the farmers about the procedures, terms & conditions, quality of service etc. and also for improvement of power supply in rural areas. The recommendations of the "Committee on rural consumers' complaints", should be adopted by the Electricity Boards without delay. (6.4.8 & 6.8 )

#### Material Shortage

21. Advance planning should be done for procuring materials required for rural electrification, both on long-range and short-term basis. .... (6.5 )
22. Wood poles may be used wherever they are available. Jointed wood poles may also be used, so that shorter lengths of timber can be utilised. Timber treatment plants should be set up so that treated wood poles could be used. Where wood poles are not available, extensive use of RCC & PCC poles should be made and factories for their manufacture established. (6.5., 6.5.1 &

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23. The rationalised specifications and construction standards, as compiled by the Rural Electrification Corporation, should be adopted. ....(6.5.2)
24. The procedure for obtaining allocation of steel, cement, aluminium, zinc and other scarce materials may be improved, so as to remove the difficulties experienced by the States. .... (6.5.4.)
25. Geo-hydrological surveys should be completed on top priority basis and their results made available to all concerned. The Govt. of India should provide matching grants to the State Governments for the purpose. .... (6.6 )
26. State Governments should set up suitable agencies for repurchase of diesel engines from farmers, so that they can go in for electrified pumpsets. Suitable facilities for providing loans to the farmers for purchase of electricity operated pumpsets may also be made available. .... (6.7 )

Organisational Aspects

27. The wings responsible for planning and execution of rural electrification works in these states should be strengthened and made independent, preferably under the charge of a senior officer. .... (6.9.1 & 6.9.4)
28. The States in North-Eastern Region should be provided help in training their personnel in design, construction and maintenance of rural electrification works. The staff posted in difficult and remote areas should be properly compensated. .... (6.9.2)
29. The authority for giving administrative and technical sanctions should be decentralised and quick clearance should be given to the projects. .... (6.9.3)
30. There should be one coordinating authority at Central level, responsible for development of rural electrification in the country. Similarly, at State level also, there should be one authority responsible for this work, in each State. .... (6.9.4)
31. State Governments should ensure coordinated and rational development of all the areas in the States. Special assistance may be provided to areas suffering from natural calamities or geographical debilities. More Central Sector funds may be invested in such regions. If necessary, State Governments should provide subsidies

32. Under the rural electrification programme of Minimum Needs, the States should concentrate their efforts in a large number of small schemes built around potentially good focal points of development. .... (6.10)

Financial Aspects

33. Funds for rural electrification under the State Plan outlay should be earmarked and the State Govts. should release these funds in full and with utmost expediency. Continued outflow of funds should be ensured by the financing organisations. .... (6.11.1 & 6.11.3)
34. Central Sector funds should be routed more through the State Governments and less through the Rural Electrification Corporation. .... (6.11.2)
35. Early decision may be taken by the Central Government regarding the advancing of funds by the financial institutions, including public undertakings, to the Union Territories. .... (6.11.2)
36. The loans under the Minimum Needs Programme for rural electrification may be given as out-right grants to the States of North-Eastern Region, or significant concessions/relaxations may be afforded in the loan terms. The viability criteria for all rural electrification loans in the Eastern States have to be relaxed.... (6.11.4)
37. 50% cost of energisation of pumpsets should be given as subsidy by the concerned Agriculture Departments of the States to the Electricity Boards/Depts. Similarly, part of the cost of village electrification should be subsidised by the beneficiary depts. (6.11.4.)
38. The availability of R.E.C. loans for rural electrification for each State should be quantified in advance. .... (6.12.1)
39. Advance funds may be made available for purchase of materials for rural electrification for each year. The type of loan recently introduced by R.E.C. for this purpose, may be reviewed, after the reaction of the States to the same is available. .... (6.12.2)
40. In case of rural electrification loans, the criteria of physical progress, for release of second and subsequent instalments, should be relaxed. .... (6.12.3)

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41. No prior approval should be considered necessary for minor deviations for sanctioned projects. (6.12.4)
42. Additional loans should be provided to meet the increased cost of projects on account of rise in the cost of materials and labour, without affecting the scope of the projects. The relaxations recently introduced by the Rural Electrification Corporation need to be reviewed. .... (6.12.5)
43. The off-working season in these States may be effectively utilised for planning, design, procurement and arrangement of materials and coordination with other organisations, so that the actual execution in the field can be done effectively. .... ( 6.14)





REPORT OF THE COMMITTEE ON RURAL  
ELECTRIFICATION IN EASTERN STATES

C H A P T E R - I

INTRODUCTION :

1.1 The Consultative Committee of the Members of Parliament for the Ministry of Irrigation & Power (now Ministry of Energy), in their meeting held on the 2nd July, 1973, at Kodaikanal, had recommended that a Sub-Committee consisting of a few Members of the Consultative Committee may be formed, so that it could meet the concerned officers of the Eastern States, to understand their problems and review the progress in regard to Rural Electrification. Further, the Estimates Committee in their 39th report have, inter-alia, recommended that the Ministry of Energy and the Planning Commission may depute a Study Team to the States which are backward in the matter of Rural Electrification to impress upon and render necessary assistance to the authorities concerned to take immediate steps in the matter.

1.2 Accordingly, the Ministry of Energy, Government of India, constituted a "Committee on Rural Electrification in Eastern States" vide their notification No.42(29)/73-P.E., dated the 21st January, 1974, a copy of which is placed at Annexure-I.

1.3 In the first instance, the Committee consisted of the following :

- i) Professor Siddheshwar Prasad,  
Union Deputy Minister for Energy - Chairman
- ii) Shri L.D. Kotoki,  
Member of Parliament (L.S.) - Member
- iii) Shri Bhola Raut,  
Member of Parliament (L.S.) - Member
- iv) Shri Yashpal Kapur,  
Member of Parliament (R.S.) - Member
- v) Advisor(Power)/Director(Power)  
( Alternate) Planning Commission - Co-opted  
Member
- vi) Technical Director,  
Rural Electrification Corporation - Co-opted  
Member
- vii) Director(Rural Electrification),  
Central Electricity Authority - Secretary

1.4. Subsequently, the following modifications in the Membership of the Committee took place.

1.4.1. The Ministry of Energy, Government of India vide their notification No.42(29)/73-P.E., dated 29.3.1974, appointed Director(Rural Electrification), Central Electricity Authority, as the Member-Secretary of the Committee.

1.4.2. Shri A.P. Seethapathy, Technical Director, Rural Electrification Corporation Limited, who was a Member of the Committee ceased to be a Member consequent upon his retirement with effect from the 15th July, 1974. However, he was subsequently re-appointed a Co-opted Member of the Committee, vide Ministry of Energy letter No.42(29)/73-P.E., dt. 27.9.1974.

1.4.3. Shri B.N. Baliga, Advisor (Power), Planning Commission was subsequently appointed the Chairman U.P. State Electricity Board, Lucknow. The alternate member, Shri H.R. Rao, Director (Power), Planning Commission, who was subsequently appointed Chief (Power), Planning Commission, was associated with the work of the Committee.

1.5. Final Membership of the Committee was as under :

- |  |                       |
|--|-----------------------|
| i) Professor Siddheshwar Prasad,<br>Union Deputy Minister for Energy     | - Chairman            |
| ii) Shri L.D. Kotoki,<br>Member of Parliament (L.S.)                     | - Member              |
| iii) Shri Bhola Raut,<br>Member of Parliament (L.S.)                     | - Member              |
| iv) Shri Yashpal Kapur,<br>Member of Parliament (R.S.)                   | - Member              |
| v) Advisor(Power)/Director(Power)<br>(Alternate)Planning Commission      | - Co-opted<br>Member  |
| vi) Shri A.P. Seethapathy,<br>Ex-Technical Director, R.E.C.              | - Co-opted<br>Member  |
| vii) Shri H.K. Bansal, Director (R.E.),<br>Central Electricity Authority | - Member<br>Secretary |

1.6. Terms of reference set for this Committee were :

- i) To review the progress achieved in the matter of rural electrification in these States of Assam, Bihar, Manipur, Meghalaya, Nagaland, Orissa, Tripura and West Bengal;

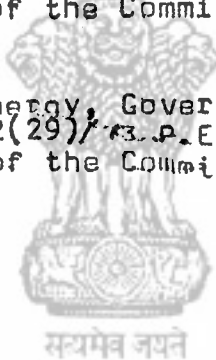
- ii) To identify the reasons for slow progress of rural electrification in these States and to recommend steps needed to be taken to accelerate the progress;
- iii) To examine the adequacy of the provisions made by these States in their respective Plans for Rural Electrification and the additional resources available from the institutional sources and make such suggestions as may be considered necessary.

1.6.1. The Committee was to submit its report within a period of six months.

1.6.2. The Ministry of Energy, Government of India vide their notification No. 42(29)/73-P.E., dated the 29th March, 1974, included the Union Territories of Arunachal Pradesh and Mizoram in the North Eastern Region within the purview of this Committee.

1.6.3. The Ministry of Energy, Government of India, vide their notification No. 42(29)/73-P.E., dated the 5th September, 1974, extended the term of the Committee, upto the 20th January, 1975.

1.6.4. The Ministry of Energy, Government of India, vide their notification No. 42(29)/73-P.E., dated the 28th March, 1975, extended the term of the Committee upto 31st March 1975.



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CHAPTER - II

Deliberations of the Committee:

2.0 The details of the various meetings held and the tours undertaken by the Members of the Committee are indicated below :

2.1 First Meeting

2.1.1 The first meeting of the Committee was held at 9.30 AM on the 21<sup>st</sup> March, 1974 at New Delhi, under the Chairmanship of the Union Deputy Minister for Energy and the following were present :

- i) Shri L.D. Kotoki, Member of Parliament (L.S.)
- ii) Shri Bhola Raut, Member of Parliament (L.S.)
- iii) Shri Yashpal Kapur, Member of Parliament (R.S.)
- iv) Shri B.N. Baliga, Advisor(Power), Planning Commission
- v) Shri A.P. Seethapathy, Technical Director, R.E.C.
- vi) Shri H.K. Bansal, Director (Rural Electrification), Central Electricity Authority.

2.1.2 It was decided that questionnaires may be prepared for obtaining information both from the State Electricity Boards and the State Governments for the use of the Committee for preparing the report. The information received would be analysed and put up to the Committee subsequently. (Accordingly questionnaires were prepared and supplied to various State Governments/State Electricity Boards/Electricity Departments. The information received till the preparation of the Report, from these questionnaires was compiled and made use of in this report. However, the statistical data supplied by several States was not in accordance with the data separately furnished by them to this Authority and since there was no time to get the clarifications, the data available with the Authority has been made use of. Wherever 1971 census figures are available, they have been given; otherwise most of the data is based on 1961 census.)

2.1.3 It was decided that the Union Territories of Arunachal Pradesh and Mizoram in the North Eastern Region may also be included in the scope of the work of the Committee and the Government of India may be approached for the same.

2.1.4. It was decided that the Committee should visit the various States in the Eastern and North-Eastern Region for discussion with the State Government/State Electricity Board officers to apprise themselves with the problems obtaining in

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these States for the development of Rural Electrification and to suggest measures to accelerate the same.

2.1.5 Since the cost of Rural Electrification in these States is comparatively very high, the Chairman desired that a note should be prepared by the Central Electricity Authority recommending the use of cheaper materials for Rural Electrification. It was also suggested that proper co-ordination with other development departments and proper planning for arrangement of the funds and line materials should be made by the State Electricity Boards/Electricity Departments to attain optimum economies and saving in time. In this connection, the Ministry of Energy had addressed a letter No. 42(28)/74-PE, dated 25.6.1974 (copy enclosed at Annexure II), to the Chairmen of all the State Electricity Boards, for maximising the rural electrification programme within the available funds, in which a number of suggestions regarding use of cheaper materials/construction methods for rural electrification, were made.

## 2.2 Second Meeting :

2.2.1 The Committee held their second meeting at Gauhati on the 5th, 6th and 7th April, 1974. The following were present :-

- i) Professor Siddheshwar Prasad,  
Union Deputy Minister for Energy
- ii) Shri L.D. Kotoki,  
Member of Parliament
- iii) Shri Yashpal Kapur,  
Member of Parliament
- iv) Shri A.P. Seethapathy,  
Technical Director, Rural Electrification Corp.
- v) Shri H.K. Bansal, Director(Rural Electrification),  
Central Electricity Authority.

2.2.2 The Committee met some Ministers and officials of the Governments and the State Electricity Boards/Electricity Departments of the seven North-Eastern States of Arunachal Pradesh, Assam, Meghalaya, Mizoram, Manipur, Nagaland and Tripura. The State authorities apprised the Committee of the progress of rural electrification and discussed various problems experienced by them in taking up large scale rural electrification programme. The problems mainly related to shortage of power, shortage of materials, difficult terrain, high cost of rural electrification, long lengths of transmission/distribution lines required and scarcity of resources. The specific problems experienced by the State authorities, during these meetings, have been dealt with

elsewhere in this Report. As a result of this meeting, it was possible for the Committee to know, on the first hand basis, the specific problems being faced by the State authorities, in extending rural electrification in these States. Therefore, the Committee sought for further clarifications on specific points and also requested the State authorities to expedite the information/questionnaire asked for earlier by the Committee for its work.

### 2.3 Third Meeting :

2.3.1. The third meeting of the Committee was held on the 18th July, 1974, at 3.30 P.M. at New Delhi, under the Chairmanship of the Union Deputy Minister for Energy, Professor Siddheshwar Prasad, and the following were present :

- i) Shri Yashpal Kapur, Member of Parliament
- ii) Shri L.D. Kotoki, Member of Parliament
- iii) Shri B.N. Baliga, Advisor(Power), Planning Commission
- iv) Shri H.K. Bansal, Director (Rural Electrification), Central Electricity Authority.

In addition, Shri R. Kapur, Director(FA&P), Ministry of Energy was also invited to attend the meeting.

2.3.2 The Committee decided that the Government of India should be approached to extend the term of the Committee by another six months.

2.3.3 The Committee also decided to pay a visit to the remaining States for getting an on the spot information in respect of these States.

2.3.4 The Committee considered the adequacy of resources of the States during the Fifth Plan and it was the general consensus that since the North-Eastern Council have got sufficiently large resources available with them for developmental plans in this region, they may be approached to allocate some money for expansion of rural electrification in these Member States. This should be in addition to normal State Plan funds/R.E.C. loans allotted and obtained for rural electrification works during the Plan discussion. ( This matter, however, was subsequently checked up by the Advisor(Power), Planning Commission, and it was ascertained that N.E.C. is concerned only with such programmes/projects, which will benefit the region as a whole and rural electrification does not qualify for such allocations from the N.E.C. funds. Also, in the meeting of the N.E.C. held on 25.7.1974, the available funds were allocated without keeping any reserves for rural electrification programme )

2.3.5 The Committee also decided that the States may be impressed to ensure better coordination between the different development departments with a view to obtaining better returns both by the consumers as well as by the Electricity Boards/Electricity Departments.

#### 2.4. Fourth Meeting

2.4.1. The Fourth Meeting of the Committee was held on the 17th February, 1975, at 3 P.M. at New Delhi under the Chairmanship of the Union Deputy Minister for Energy, Professor Siddheshwar Prasad. The following were present :

- i) Shri L.D. Kotoki, Member of Parliament
- ii) Shri A.P. Seethapathy, Ex-Technical Director, Rural Electrification Corporation
- iii) Shri H.K. Bansal, Director (R.E.) Central Electricity Authority.

In addition, Shri B. Sinha, Joint Secretary (Power), Ministry of Energy and Shri H.R. Rao, Chief (Power), Planning Commission also attended the meeting.

2.4.2. The Draft Report of the Committee was discussed and certain modifications were suggested.

#### 2.5. Fifth Meeting

2.5.1. The Fifth Meeting of the Committee was held on the 18th March, 1975, at 3.30 P.M. at New Delhi under the Chairmanship of the Union Deputy Minister for Energy, Professor Siddheshwar Prasad. The following were present :

- i) Shri Yashpal Kapoor, Member of Parliament.
- ii) Shri L.D. Kotoki, Member of Parliament.
- iii) Shri A.P. Seethapathy, Ex-Technical Director, Rural Electrification Corporation.
- iv) Shri H.K. Bansal, Director (R.E.), Central Electricity Authority.

In addition, Shri B. Sinha, Joint Secretary (Power), Ministry of Energy and Shri H.R. Rao, Chief (Power), Planning Commission also attended the meeting.

2.5.2. The final draft of the report of the Committee was discussed and after some modifications, the report was approved.

2.5.3. It was decided that the term of the Committee may be extended further upto 31.3.1975.

2.5.4. It was also decided that the chairman the Committee may submit the report to the Minister for energy, Government of India, on behalf of the Committee.

CHAPTER III

REVIEW OF PROGRESS

3.1. Introduction:

3.1.1. In this Chapter it is proposed to review the progress of rural electrification in the States of Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Tripura and West Bengal. To give a ready and clear picture of the progress made, a number of Annexures have been enclosed. Annexures III, IV & V give general statistical information about these States. From these Annexures, the information about the area, the extent of tribal population, the Scheduled Caste population, the number of villages in various population groups, etc. can be known. One fact that emerges in respect of these States is either they have very high percentage of tribal population or Scheduled Caste (Harijan) population or both; these sections of society being economically very backward, cannot afford to have electricity whether for their homes or for their fields or other establishments. Another fact which emerges from these Statements, is that most of the villages in these States have very small population.

3.1.2. Annexure VI indicates the Plan-wise increase in the installed capacity and Annexure VII gives the lengths of the transmission/distribution lines of various voltages existing in each State. With the help of these two Annexures, it has been possible to assess the progress made in development of power and the attention paid to this aspect in the earlier years, as also the availability of extensive transmission and distribution net-works for supporting any contemplated rural electrification programme.

3.1.3. Annexures VIII and IX indicate the Plan-wise progress of electrification of villages and energisation of irrigation pumpsets/tubewells. Annexure X indicates the villages electrified in various population groups and also the percentage of rural population benefited. From this Annexure it can be seen that one of the reasons for slow progress is the large number of villages with less than 500 population in these States, electrification of which has lagged behind considerably because it is not economically viable.

3.1.4. Annexure XI indicates the per capita consumption of electricity, the percentage of agricultural consumption to the total consumption of energy and the total and agricultural connected loads in each State. This information indicates the extent of electricity used in different States, and the extent of electricity being utilised for agricultural purposes. The agricultural consumption in the North Eastern States, except Assam, is negligible, for various reasons. The



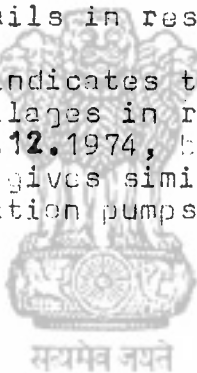
per capita consumption also in these States is much below the All-India average.

3.1.5. Annexures XII & XIII give the position of sanction of schemes by Rural Electrification Corporation in respect of these States giving the programme-wise and category-wise details. In respect of most of the States of the North Eastern Region, no schemes have been sanctioned by the Rural Electrification Corporation.

3.1.6. Annexures XIV to XXIII give the district wise information (basic statistical data, length of lines, progress of rural electrification etc.) in respect of the 4 major States of Assam, Bihar, Orissa and West Bengal. This information in respect of other States, wherever available has been included in this Chapter while discussing that relevant State. In this connection, it may be stated that the questionnaires referred to in para 2.1.2. above have not been received duly filled in from the Electricity Department of Arunachal Pradesh and also from the State Governments of Assam and Nagaland. This has been the main reason for not including sufficient details in respect of these States.

3.1.7. Annexure XXXIII indicates the State-wise progress of electrification of villages in respect of all the States of the country, as on 31.12.1974, based on the latest progress reports. Annexure XXXIV gives similar information in respect of energisation of irrigation pumpsets.

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### 3.2 ARUNACHAL PRADESH

3.2.1 Arunachal Pradesh is one of the remotest States of the country and borders China and Burma on the North East Frontier. It has a large area, having very small population. The population density of 5.6 persons per sq. km. is the lowest in the country. This State is geographically divided into several regions starting from Brahmaputra Plains, Lower highlands, Upper Highlands and the snow-covered mountainous regions. Except for the lower plains of the Assam Valley, rest of the areas have difficult terrain, scattered population, etc. The lower regions are blessed with considerable rain-fall of above 250 Cm. per year; the upper reaches have less rain-fall comparatively. This State has been divided into 5 districts, the basic data about which is given below:

Sr. No.	District	Area (Km <sup>2</sup> )	Total Population	Tribal Population
1.	Kameng	13,724	86,001	67,877
2.	Subansiri	14,797	99,239	90,242
3.	Siang	23,723	1, 21,936	1,05,833
4.	Lohit	24,427	62,865	36,611
5.	Tirap	6,907	97,470	68,845
Total :		83,578	4,67,511	3,69,408

3.2.2. As per the 1961 Census, there are no towns in this Union Territory and the entire population can be considered as rural. Even, as per the 1971 census, there are only 4 towns and the urban population constitutes less than 1% of the total. The Harijan population is negligible, but about 79% of the population is tribal and economically backward. This area is strategically located and is Centrally administered. The development of power in the State has suffered considerably and so has rural electrification. Out of 2,451 villages in the Union Territory as per 1961 Census, only 59 (2.4%) were electrified till the end of the Fourth Plan and since then, only two more villages have been electrified till September, 1974. On account of difficult terrain and scattered nature of villages, the cost of rural electrification is very high, as long transmission/distribution networks are necessary. The State possesses considerable potential for generation of hydro-electric power. So far, however, not much progress in tapping this potential has been made. In fact, the major site of utilising Brahmaputra waters for generation of electricity lies in this territory.

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3.2.3. The cultivable area of the State is 4.33 lakh hectares, but the cultivated area is only 1.67 lakh hectares. The irrigated area is merely 22,940 hectares, which is mainly done by canals or by diesel operated pumpsets. About 1.15 lakh hectares land area in the State is under single cropping and 14,450 hectares is under double cropping. The main crops are Jhum paddy, Millet and Maize. Agricultural operations are not possible for an average 75 days in a year mainly due to snow fall in upper reaches. There are very few educational institutions, only one college and 566 schools were existing as on 31.3.1973. The percentage of literacy is about 11% only. The total length of the metalled roads was 375 kms. and that of the un-metalled roads was 1,568 kms. as on 31.3.1973. The number of Hospitals/Primary Rural Health Centres existing in March, 1973 was 121. There are a few industries also, mainly saw mills and rice mills. The total number of industrial units existing in 1963-70 was only 12, of which 9 were run by diesel and 3 without any power. In addition, there were 21 craft centres in the Public Sector, to promote local arts and crafts, as well as for manufacture of indigenous articles for local needs.

3.2.4. No village was electrified during the First Plan and only 2 villages could be electrified during the Second Plan. 20 more villages were electrified during the Third Plan and another 24 villages during the three annual Plan periods, 1966-69. However, during the IV Plan, only 13 villages were electrified, the progress at the end of IV Plan being 59. There are no energised irrigation pumpsets in this State.

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3.2.5. The State Government had suggested during the meeting at Gauhati that the topographical and the geographical situation is most opportune for tapping the hydro electric sources in the form of micro hydel generation, so that these can supply power to nearby villages and thus avoid long and costly transmission / distribution lines. The cost of diesel generation is very high, specially on account of the fact that the diesel oil has to be carried from the down country over long and difficult roads, and in certain cases even by air.

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### 3.3. ASSAM

3.3.1. Assam State is having about 2.7% of the total population of the country. The population density in the State is 187 persons per sq. km. The State has nine districts. The district-wise details of area, population, number of villages and towns, etc. is given in Annexure XIV. The rural population is about 91% of the total. 11% population is that of tribals and 6.2% is of Harijans. From the district-wise progress of rural electrification, it is observed that whereas the districts of Lakhimpur, Dibrugarh, Sibsagar, Nowgong and Darrang are relatively more advanced as compared to the districts of Kamrup, Cachar and Goalpara, very little rural electrification has been done in the districts of North Cachar & Mikir Hills.

3.3.2. The State is one of the most backward States of the country in the matter of power development and rural electrification in particular. The installed capacity of this State was 10.43 MW at the end of the Second Plan, 159.54 MW at the end of the Third Plan in 1966 and 158.2 MW at the beginning of the 4th Plan in 1969. This was anticipated to increase to 209 MW at the end of IV Plan. Even this rise in installed capacity is not upto the mark and the per capita consumption of the State is much below the All-India level, being only 25.8 kwh against 95.5 kwh for the country as a whole, during the year 1973-74.

3.3.3. Out of the seven States of North-Eastern Region, Assam is the only one which has an old power system and suitable organisation. The North-Eastern Region, at present, has two distinct power systems, the Naharkatia System and the Umiam-Umtre System. The Assam State Electricity Board is already in the process of inter-linking the two systems by a 220 kV line, which is expected to be completed soon. The Board is already supplying power from these two systems to Arunachal Pradesh, Nagaland, Tripura and Bhutan. For ensuring suitable power supply to the States of this region and even to the adjoining regions, it is necessary that the transmission system is adequately re-inforced. Construction of Transmission lines for supplying power to Manipur and North Bengal is already under progress. One 132 kV line for feeding power into this combined grid from Loktak Hydro Project is also expected to be completed soon. In addition, a number of lines are proposed to be constructed to connect the new generating stations with the existing systems, the details of which are indicated in Annexure XV.

3.3.4. In the field of rural electrification, out of 21,995 villages in Assam as per 1971 Census, only 1,146 (5.2%) villages were electrified by the end of the 4th Plan. This percentage of village electrification compares very unfavourably with the all-India average of 27.6 on that

date. Majority of the villages in Assam have a population below 500 (about 56%). However, only 2.5% villages of this group have been electrified, whereas in the population group of 500 and above, 8.7% villages were electrified till 31.3.1974. It is on account of this fact that rural population benefited in Assam by electricity till the end of the 4th Plan was 10.2%, in spite of such a low percentage of village electrification. The progress of village electrification cannot be said to be reasonable in any of the districts of the State, though some districts may be relatively more advanced in rural electrification than other districts.

3.3.5. The progress had been very indifferent in the earlier Plan years. During the 1st Plan, no village was electrified and no pumpset energised. During the 2nd Plan, when stress was laid on the electrification of localities for providing employment opportunities to the rural population, only 13 villages were electrified. During the 3rd Plan, 53 additional villages were electrified. During the three annual Plan periods ( 1966-69 ), there had been some good progress as far as rural electrification is concerned and the number of villages electrified rose to 331 at the beginning of the Fourth Plan. At the end of the 4th Plan, 1146 villages stood electrified.

3.3.6. In the field of pumpset energisation, the progress has been equally bad. There was no pumpset energised during the 1st, 2nd and 3rd Plan periods. After the drought years of 1964-65 and 1965-66, when the necessity of energisation of more pumpsets for providing better irrigation/supplemental irrigation facilities to the farmers for increasing food production was realised, the stress of rural electrification was re-oriented to energisation of pumpsets. During the three Annual Plans, only 55 pumpsets were energised and additional 650 were energised during the 4th Plan period. Number of energised pumpsets/tubewells at the end of the IV Plan was 705 only.

3.3.7. Assam falls within the region of heavy rainfall and is richly vegetated. It is, however, significant to note that the rainfall in Assam is mainly during 4 to 5 monsoon months, causing heavy floods, whereas during the remaining 7 to 8 months, there is practically no rainfall. This

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situation obtains in practically all the Eastern States which are more or less in heavy rainfall region generally, but the rainfall is restricted to the monsoon months only. During these lean-rainfall months, very little agricultural activities are possible. What is redeeming is that in most of the States, except the hilly regions, there are vast surface and ground water resources, which are largely of perennial nature. The economy of Assam plains is mainly agriculture based and is dominated by tea-plantations, cultivation of paddy, jute, sugarcane, oil seeds etc. and mineral oil refining in the recent years. There are no major irrigation projects in the State. The first medium irrigation project is based on monsoon rainfall. Few other medium irrigation projects are under execution. Thus it is obviously imperative that with a view to enabling extensive irrigation during lean-rainfall months, the available vast surface and ground water resources must be harnessed, for which extension of rural electrification to the potential areas has to be expedited. The urgency of taking up these programmes is also underlined by the fact that rural electrification has the potential of absorbing not only the growing number of educated unemployed, but also other rural population by providing them better job opportunities by way of rural industrialisation, better agricultural operations and general economic progress as a result of fast tempo of the developmental activity in rural areas. This will also help in arresting the migration of rural population to urban areas and will avoid over-crowding in urban localities with its associated problems. This aspect of rural electrification relates not only to Assam but to all the other States of the country.

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### 3.4 BIHAR

3.4.1. Bihar is the second most populated State of the country, having about 10.3% population. The population density is 325 per Sq. Km. Earlier, the State had 17 districts, which have recently been increased to 31. As complete details of the new district set-up is not available, old district set-up has been adopted for the purpose of this report. The district-wise details of area, population, number of villages and towns and progress of rural electrification is given in Annexure-XVI. 90% population is rural. Tribal population is 8.8%, whereas scheduled castes (Harijans) constitute 14.1% of the population of the State. The State is one of the backward States of the country in the matter of power development and rural electrification in particular. From the Plan-wise increase in the installed capacity, it will be seen that at the beginning of the 4th Plan the installed capacity of the State was meagre, i.e. 239.18 MW, which has since increased to 604 MW (anticipated) as on 31.3.1974. Even this rise in the installed capacity is not satisfactory and the per capita consumption of 68.6 kWh for the State is much below the all-India figure of 95.5 kWh for the year 1973-74.

3.4.2. Bihar can be divided in three distinct regions, comprising of north Bihar, south Bihar and six tribal districts in the Chhota Nagpur plateau.

i) North Bihar comprises of six districts, namely, Champaran, Saran, Muzaffarpur, Saharsa and Darbhanga. Purnea and is drained by Kosi and Gandak rivers and their tributaries like Burhi Gandak, Gaghra, Bagmati, etc. It has soft alluvial soil which is eminently suited for agriculture. It has a very high density of population. Since the area is unsuitable for surface wells except in some pockets, only tubewells of sizes varying from 4" to 6" owned by farmers and of 10" by the State Government are constructed. Of late, unconventional tubewells of bamboo have also become popular among the poor farmers because of their low cost.

ii) The South Bihar comprises of five districts of Shahabad, Gaya, Patna, Monghyr and Bhagalpur. In Eastern part, the area is drained by river Son. Most of the area has alluvial soil and is predominantly agricultural. The area is suitable for surface wells and, therefore, pumpsets of 2 H.P. to 5 H.P. have been installed in very large numbers in these districts. Most of the demand of electricity is for irrigation, agro-industry, domestic and commercial purposes.

iii) The Chhota Nagpur Plateau consists of six tribal districts of Palamau, Hazaribagh, Dhanbad, Santhal Pargana, Ranchi and Singhbhum. This is a rocky and hilly belt with

vast tracts of forests and mineral areas. It is mostly populated by tribals. Because of the mineral wealth available, the area centres most of the industrial activity and bulk of the power requirement is for industrial purposes. This region also contains some of the major Dams and Power Houses of Damodar Valley Corporation complex. The land is not much suited for agriculture and sufficient irrigation facilities are also not available. Recently, some programmes for sinking big diameter tubewells in this region have been launched for providing irrigation for agricultural purposes.

The district-wise <sup>figures</sup> ~~figures~~ of rural electrification in Annexure XVI give the progress made in these three regions separately.

3.4.3. The length of transmission and distribution lines in different circles of the Bihar State Electricity Board as on 31.3.1973 is given in Annexure XVII. It may be seen that most of the lines are in South Bihar and D.V.C. region. The North Bihar specially, and the Chhota Nagpur region lack the transmission lines as well as sub-transmission and distribution lines. A list of the transmission lines of 132 kV and above existing/under construction/proposed is given in Annexure XVIII.

3.4.4. In the field of rural electrification, out of 67,665 villages in Bihar as per 1961 Census, only 9,775 (14.4%) were electrified by the end of the 4th Plan. This percentage of village electrification compares very unfavourably with the all-India average of 27.6 on that date. The latest progress reports for Bihar indicate that 9,836 villages (14.5%) were electrified in Bihar till 30.9.1974. Bihar constitutes mostly of villages with population below 500 (62.5%) and most of the electrification so far in Bihar has been done in the villages with a population of above 500. It is on account of this fact that the rural population benefited in Bihar by electricity till the end of the 4th Plan was 26.9%, in spite of such a low percentage of village electrification. The district-wise progress of rural electrification in Annexure XVI is broadly indicated region-wise separately for North Bihar, South Bihar and Chhota Nagpur regions, as on 31.3.1974. The progress of village electrification has been reasonable only in the South Bihar districts, excluding Chhota Nagpur region. In the hilly and tribal districts of Chhota Nagpur region the progress is minimal.

3.4.5. In the field of pumpset energisation the progress has been equally bad, although after the third plan the tempo of pumpset energisation increased to some extent. Beginning with a meagre of 47 pumpsets energised at the beginning of the 1st Plan, about 50,000 pumpsets/tubewells stood energised at the beginning of the 4th Plan. During the 4th Plan, this figure has almost doubled and at the



end of the 4th Plan 96,922 pumpsets/tubewells were energised. As per the latest progress reports, till 30.9.1974, 99,331 irrigation pumpsets/tubewells had been energised.

3.4.6. The progress has been very indifferent in the earlier Plan periods. During the 1st Plan, only 296 villages were electrified and 650 pumpsets were energised. During the Second Plan, when stress was laid on the electrification of localities for providing employment opportunities to the rural population, 2,005 villages were electrified and 2,503 pumpsets energised. However, there was a slump during the Third Plan, with only 1,439 villages electrified and the stress had shifted to the energisation of pumpsets, with 7,460 pumpsets energised during this Plan. As mentioned above, after the drought years of 1964-65 and 1965-66, when the necessity of energising more pumpsets for providing better irrigation facilities to the farmers for increasing food production was realised, the rural electrification was re-oriented and during the three Annual Plans from 1966 to 1969, the progress was stepped up. However, good progress was available only during the year 1966-67 when 1,286 villages were electrified and 14,082 pumpsets energised. The progress during 1967-68 slumped to the electrification of 659 villages and energisation of 16,009 pumpsets and during the year 1968-69 the electrification of 661 villages and energisation of 9,254 pumpsets. Almost the same rate of progress was maintained during the 4th Plan and during the five year period from 1969 to 1974, only 3,425 villages were electrified and 46,917 pumpsets energised.

3.4.7. The district-wise progress indicates that in the matter of energised irrigation pumps also, the districts in North Bihar and Chhota Nagpur region have retarded progress. In fact, in the districts of Saharsa, Saran, Champaran, Darbhanga, Purnea (North Bihar), Santhal Pargana, Hazaribagh, Dhanbad, Singhbhum (Chhota Nagpur region) and Bhagalpur (South Bihar), the number of pumpsets energised per village is less than five. Most of the pumpsets are energised in three districts of Patna, Gaya and Shahabad, which are all in South Bihar. The progress in the remaining districts is also marginal. Only these three districts have reasonable progress in the matter of village electrification also, with more than 25% villages electrified. The progress in the remaining districts is comparatively very low, specially in districts like Santhal Pargana (3.7%), Singhbhum (2.1%), Ranchi (3.6%), Saharsa (8%), Purnea (4%) and Hazaribagh (6.2%).

3.4.8. As explained earlier, Bihar is mainly an agricultural area. Except for monsoon season, it does not have an assured irrigation. Since sufficient underground water is available and supplemental irrigation is necessary for

agriculture, the demand for agricultural pumping load should be predominant here. But the consumption of electricity for agricultural purposes has not shown any increasing trends. Out of the total connected load of 1443.63 MW in Bihar as on 31.3.1973, the agricultural connected load was only 252.69 MW and the number of consumers 87,115. The agricultural consumption was 75 MKWH, being only 2.8% of the total consumption for the State during 1972-73. The utilisation of electrical energy for agricultural purposes is low and the agricultural load provides a very low load factor. For the year 1972-73, the load factor for agricultural load was only 12% against 18% of the system as a whole.

3.4.9. The prospective demand for energised irrigation pumps for agricultural purposes is substantial and can be seen from the fact that as on 31.3.1973, 22,646 applications were pending with the Bihar State Electricity Board for agricultural connections.



### 3.5. MANIPUR

3.5.1. Manipur is a small State having about 2% population of the country. Manipur got the status of a State only on 21.1.1972. Earlier, it was a centrally administered Union Territory. The population density in the State is 48 persons per sq. Km. The State has five districts. Out of a total area of 22,356 sq. Kms., more than 20,000 sq. Km. is hilly. About 14,000 sq. Km. area is covered by forests. The basic district-wise data regarding area, population, number of villages and progress of electrification, etc., is as under :-

Basic District-wise data for Manipur  
( 1971 Census )

Sr. No.	District	Total Area (Km <sup>2</sup> )	Total Population	Tribal Population	Total No. of villages	No. of villages electrified as on 31.3.74	Total No. of towns	No. of I.P. Sets energised as on 31.3.74
1.	North Manipur	3,417	1,04,175	82,706	404	7	Nil	Nil
2.	West Manipur	4,344	44,975	43,996	184	2	Nil	Nil
3.	Central Manipur	5,605	7,63,260	55,854	783	192	1	Nil
4.	South Manipur	4,581	98,114	91,984	362	9	Nil	Nil
5.	East Manipur	4,409	62,229	59,926	216	3	Nil	Nil
Total :		22,356	10,72,753	3,34,466	1949	213	1(*)	Nil

(\*) As per 1961 Census and is electrified.

~~From the above table, it will be seen that~~ About 87% population of Manipur is rural. Tribal population is 31.1%, but the harijan population is only 1.5%. The 4 districts of North, West, South and East Manipur are basically tribal, mostly forest covered and hilly, scarcely populated and almost entirely rural.

3.5.2. Due to heavy rainfall and good soil conditions, this is a richly vegetated State. Rice and Sugarcane are the main crops, but farming has been done in a limited area. Total area under single crop is 1380 sq. Km. and under double crop 12.50 sq. Km. This appears to be due to limited irrigation facilities and predominance of hilly and forest area. Preliminary surveys to determine ground water availability have been carried out, but with limited success. Detailed survey by Ground Water Board is being arranged. Ethnically, this is a much advanced State than the neighbouring States. Percentage of literacy was 32.9 in March, 1971 and there are a number of educational institutions. The main industries are Khandsari Units, Rice, Flour and Saw Mills. There are 291 industrial units which are run with electricity and additional 50 units operated by Diesel. Industrial consumption was about 14% of the total, the rest being mainly domestic and commercial.

3.5.3. The State is one of the more backward States of the country in the matter of power development and rural electrification in particular. The increase in the installed capacity in earlier years was meagre. Even at the beginning of the 4th Plan, the installed capacity of the State was only 3400 kW, which is anticipated to increase to 6,000 kW by 31.3.1974. The per capita consumption of the State during 1973-74 was very low, being only about 8 kWh as against 95.5 kWh for the country as a whole. The total length of lines as on 31.3.1973 in the State was as under :

33 kV	- 169 km;
11 kV	- 582 km;
L.T.	- 565 km.

3.5.4. In the field of rural electrification, out of 1,949 villages in Manipur as per 1971 Census, only 213 (10.9%) were electrified by the end of the 4th Plan. This percentage of village electrification compares very unfavourably with the all-India average of 27.6 as on that date. Manipur constitutes mostly of villages with population below 500 (74.5%), and most of the electrification in the State has been done in the villages with population range of above 500. It is on account of this fact that rural population benefited in Manipur by electricity till the end of the Fourth Plan was 41.1%, in spite of such a low percentage of village electrification.

3.5.5. During earlier years, not much attention was paid to village electrification in Manipur. At the beginning of the 1st Plan, only 9 villages were electrified in this State. During the First & Second Plans, only 3 and 17

villages respectively were electrified. However, during the Third Plan, additional 86 villages were electrified. During the three Annual Plans and the 4th Plan respectively, additional 38 and 60 villages were electrified.

3.5.6. Manipur falls within the region of heavy rainfall. The average rainfall is between 200-250 Cms., in most of the State. The main irrigation facilities in the State are

- (i) Loktak Irrigation Scheme (covering 243 sq. Km.)
- (ii) Thoubal Irrigation Scheme (covering 2 sq. Km.)
- (iii) Minor Irrigation.

There are 213 diesel operated pumpsets under use of Agricultural Department as on 31.3.1973, most of which (200) are in Central District only. There are no agricultural pumpsets/tubewells energized in Manipur. But there is scope of conversion of these diesel operated pumpsets to electrical operation in the Central District.



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### 3.6. MEGHALAYA

3.6.1. Meghalaya is also a small State having 1.9% population of the country. Meghalaya State was formed by carving out 2 districts namely Khasi Hills, Jaintia Hills and Garo Hills from the then Assam State and became full fledged State on 21.1.1972. The population density in the State is 45 persons per sq. Km. About 85% population of the State is rural. Tribal population is 80.5%, but Harijan population is negligible.

3.6.2. Meghalaya is entirely a hilly State and has very Heavy rainfall. The average rainfall exceeds 250 cm. In fact, Cherranpunji, the place of heaviest rainfall in the country, is in this State. Total cultivated area, however, is only 1,950 sq. Km. 8,510 sq. Km area is covered by forests. The main irrigation facilities are by flow irrigation of perennial streams and dug out channels. Irrigated area is only 102.9 sq. Km. No survey for ground water availability has been done.

3.6.3. The State is one of the most backward States of the country in the matter of power development and rural electrification. Till recently Meghalaya did not have a separate State Electricity Board and the power development programme in this State, including rural electrification, was being looked after by the Assam State Electricity Board. However, recently a State Electricity Board has been formed in this State in January, 1975. Basic district-wise data regarding area, population, number of villages, towns and progress of electrification etc. in Meghalaya is given below :-

#### BASIC DISTRICTWISE DATA FOR MEGHALAYA (1971 CENSUS)

Sl. No. District	Total area (km <sup>2</sup> )	Total population	Tribal population	Total No. of vill-ages	No. of vill-ages elec-tri-fied as on 31.3.74	Total No. of towns	No. of I.P. Sots energ-ised as on 31.3.74
1. Garo Hills	8,084	4,06,615	3,25,872	2415	14	1	Nil
2. United Khasi & Jaintia Hills	14,405	6,05,084	4,88,358	1992	123	5	Nil
Total :	22,489	10,11,699	8,14,230	4407*	137*	6*	Nil

\* As per 1961 Census all towns are electrified.

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3.6.4. Out of a total of 4,407 villages in Meghalaya, only 137 villages were electrified by the end of the Fourth Plan. This is a very low percentage of village electrification. The progress of village electrification cannot be said to be reasonable in any of the Districts of the State, though United Khasi and Jaintia Hills District has a higher percentage (6.2%) of villages electrified as compared to the district of Garo Hills, the State's percentage being 3.1 as on 31.3.1974.

3.6.5. The progress had been very indifferent in the earlier Plan years. Till the beginning of the Second Plan, no villages were electrified in this State. During this Plan, when stress was laid on the electrification of localities for providing employment opportunities to the rural population, 7 villages were electrified. There has been progressive increase in the electrification of villages in the subsequent Plan periods. During the Third Plan, 16 villages were electrified. During the three Annual Plans (1966-69), additional 25 villages and during Fourth Plan, additional 58 villages were electrified. Meghalaya State does not have any energised irrigation pumpset at present. However, there are 4 diesel operated pumpsets in operation. The Meghalaya authorities have informed that the present irrigation potential is not sufficient to meet the requirement of the State and that programme of digging new wells, during the Fifth Plan is under consideration.



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### 3.7. MIZORAM

3.7.1. Mizoram is one of the newly formed small Union Territories of the North Eastern Region, which has a population of about 3.3 lakhs, being 0.06% only of that of the country and is the lowest in the region. This State was formed in January, 1972 by carving out the Mizo District from Assam State. Naturally, it is predominantly tribal, the tribal population comprising 94.2% of the total population. Harijan population is negligible. Most of the area is hilly and the terrain is very difficult. The population density is very low being only about 15.8 per sq. Km. *p m m m*

3.7.2. The villages in this Union Territory have scarce population; more than 78% of the villages have less than 500 population. As per 1961 census, there were 730 villages in this State, of which only 5 had been electrified till the end of the 4th Plan. This gives a percentage of only 0.7 as compared to the all-India average of 27.6% as on that date. This is the lowest percentage of village electrification in the country. During the year 1974-75, no additional villages had been electrified till 30.9.1974. There are no energised irrigation pumpsets in this State.

3.7.3. This has been a neglected area since long, particularly in the field of rural electrification. Till the end of the Third Plan i.e. March, 1966, no village was electrified. After that, during the three Annual Plans, only 1 village was electrified and additional 4 villages were electrified during the 4th Plan. The power development in the State has been practically nil, most of the generation being diesel. With 75 KW capacity at the end of the Second Plan, the installed capacity of the State at the end of the 4th Plan was only about 400 KW. The areas already electrified in fact are small urban centres which have been classified as villages because of the definition laid down in the Census Hand Book. The 5 electrified villages are Aizawl, Kolasib, Serchhip, Hnahthial and Lunglie. As on 31.3.1973, there were only one industrial, 15 commercial and 1226 domestic consumers in the State and the total energy generated and utilised was only 5.9 lakh kWh.

3.7.4. The State has hardly any Transmission/Distribution net-work, in fact, there are no Transmission/Distribution lines above 11 kV in the State. Only 4 kMs. of 11 kV lines and 24 kMs. of L.T. lines are stated to be existing as on 31.3.1973.



3.7.5. In most of the area of Mizoram, there is a heavy rain-fall (more than 250 Cms.), except in the Northern area where the rainfall is between 200 to 250 Cms. The cultivated area of the State is only 715 sq. Km. and the irrigated area is only 1.64 sq. Km., out of the total geographical area of more than 21,000 sq. Km. The irrigated area is negligible, most of the irrigation being limited to flow irrigation or lift of water from hilly streams. The main crops of the area are paddy, sugarcane, potato, etc. Most of the area is under mixed crop. Although economically backward, the State has very high percentage of literacy (about 54% in March, 1971). There are large number of schools and colleges in the State. The State has only Small Industries and most of them are diesel operated.

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### 3.8. NAGALAND

3.8.1. Nagaland is one of the Eastern-most States of the country/Burma. It is a thinly populated State having about 5.16 lakhs population, which is about 0.17% of that of the country. The population density is 31.3 persons per sq.Km. About 90% of its population lives in villages. There are 960 villages in Nagaland as per 1971 census. Only 136 villages (14.1%) out of these were electrified by the end of the 4th Plan. However, all the towns are already electrified. More than 88% population is tribal. The basic district-wise data regarding area, population, the number of villages/towns and villages electrified etc., is as under :

bordering BASIC DISTRICTWISE DATA FOR  
NAGALAND ( 1971 Census )

Sl No.	District	Total Area (Km <sup>2</sup> )	Total population	Tribal Population	Total No. of villages	No. of villages electrified	Total No. of towns	No. of I.P. Sets energised
1.	Kohima	7,209	1,75,204	1,40,167	346	60	2	1
2.	Mokokchung	3,852	1,68,242	1,53,601	326	57	1	Nil
3.	Tuensang	5,466	1,73,003	1,63,834	288	19	Nil	Nil
Total		16,527	5,16,449	4,57,602	960	136	3(*)	1

(\*) Towns are as per 1961 census  
ALL TOWNS ARE ELECTRIFIED

Like other States in this region Nagaland also has considerable rainfall, from 200-250 Cms every year. Basically, it is a hilly area, with considerably rich vegetation.

3.8.2. The State had a late start in power development as well as in rural electrification. The installed capacity at the end of the Second Plan was nil and at the end of the Third Plan, only 725 KW capacity was available. At the end of the Fourth Plan, the total installed capacity of the State was only 2 MW (anticipated). The per capita consumption

of the State during the year 1973-74 was only 22.2 kWh. The total consumption of electrical energy during the year 1972-73 was 9 million kWh.

3.8.3. The State lacks in extensive transmission system. In fact, there was only 200 Km. of 66 kV lines, about 475 Km. of 33 kV, 303 KM of 11 kV lines and 525 KM of L.T. lines in the State, as on 31.3.1974. The district-wise details of transmission/distribution lines existing is given below :

District-wise Details of Transmission/Distribution lines in Nagaland as on 31st March, 1974

Sl. No.	Name of districts	33 kV lines	11 kV lines	L.T. lines
1.	Kohima	193	202	237
2.	Mokokchung	188	57	234
3.	Tuensang	94	44	54
Total		475	303	525

3.8.4. No villages were electrified during First Plan. During Second Plan only 7 villages were electrified and another 4 villages were electrified during Third Plan. However, pace of village electrification picked up during the three Annual Plans 1966-69, when additional 30 villages were electrified. During IV Plan, 95 villages were electrified. During the year 1974-75, another 12 villages have been electrified upto September, 1974 making the total number of villages electrified as on 30.9.1974 to 148. Only one pumpset has been energised in this State in the district of Kohima. It appears there is no demand for agricultural pumping in the State, possibly because of heavy rainfall, mostly hilly areas, traditional ways of agriculture and tribal ways of living. There are no diesel-operated pumpsets in the State. The State has informed that there are no pending applications for agricultural connections.

Contd.....28.

### 3.9. ORISSA

3.9.1. Orissa is a large State spread over an area of 1,55,842 sq. Km., but has only about 4% population of the country. The population density in the State is 141.5 persons per sq. Km. It has 13 districts. The district-wise details of area, population, number of villages and towns etc. are given in Annexure XIX. 91.5% population is rural and 23.1% population is tribal. Harijans constitute 15.1% of the total population.

3.9.2. The State is one of the backward States of the country, particularly in the matter of power development and rural electrification. At the end of the 1st Plan, the installed capacity in the State was less than 6 MW. During 2nd and 3rd Plans respectively, 130 MW and 179 MW capacity was added. At the beginning of the 4th Plan the installed capacity of the State was a meagre 502 MW, which has since increased to 684 MW as on 31.3.1974. The per capita consumption (during 1973-74) was below the all-India level, being 87.5 KWH, compared to 95.5 KWH for the country as a whole.

3.9.3. Most of the area of the State is sparsely populated. The density of population in the rural areas of the district of Phulbani (Baudh Khondmals) is hardly 55 per sq. Km., for Koraput 70, for Kalahandi 94, for Sundargarh 84, for Sambalpur 94, for Keonjhar 109 and for Dhenkanal 115. Due to the low density of population in some districts of the State, there are regional imbalances in developmental activities and achievement. The progress of Rural Electrification in the State is also not uniform. As on 31.3.1974, 18.2% villages in the State were electrified compared to all-India percentage of 27.6. The district-wise progress of villages electrified and pumpsets energised in the State is indicated in Annexure XIX. Only 4 districts viz. Cuttack, Dhenkanal, Ganjam & Sundergarh have reasonable progress in the matter of village electrification with more than 27.6% villages electrified. The progress in the remaining districts is comparatively very low, especially in the districts like Baudh Khondmals (1.32%), Kalahandi (4.5%), Koraput (6.06%), Bolangir (13.8%) and Mayurbhanj (14.6%). In the matter of energised irrigation pumpsets also, all the districts have a retarded progress. In fact, in all the districts, the number of pumpsets energised per village is less than 1. Most of the pumpsets have been energised in the 2 districts of Cuttack and Ganjam only.

3.9.4. As on 31.3.1973, the length of lines of various voltages existing in the State was as under :-

Transmission Lines (66 kV and above)	- 3,000 Kms.
Sub-transmission Lines (below 66 kV and above 500V)	- 13,138 Kms.
Distribution Lines (below 500 V)	- 7,953 Kms.

Contd....29.

Compared to the area of the State and number of villages existing, these lengths of Transmission/Sub-Transmission/Distribution lines are extremely in-adequate. The lengths of Transmission lines of voltages 66 kV and above in Orissa existing/under construction as on 31.3.1972 is indicated in Annexure XX. A list of the power houses existing in Orissa is given below :-

Power Houses existing in Orissa  
as on 31.3.1974

Sr. No.	Name of the Power House	Installed Capacity(MW)
1.	Hirekud I & II	270.0
2.	Talcher	250.0
3.	Machhkund	34.0
4.	Balimela	120.0
5.	Small Thermal Stations	10.0
Total :		684.0

3.9.5. At the beginning of the Planning era, no village had been electrified in this large State. During the 1st, 2nd and 3rd Plans respectively 25, 93 and 416 villages were electrified. At the beginning of the 4th Plan, only 321 villages stood electrified. Most of the progress was achieved during the 4th Plan - 7,645 additional villages were electrified, mostly during the last three years. Out of 46,466 villages in Orissa as per 1961 census, 9,466 (10.20%) were electrified by the end of the 4th Plan. This percentage of villages electrified, however, is low compared to the all-India progress. As per the Progress report, during the year 1974-75, from 1.4.1974 to 30.9.1974, additional 1,142 villages were electrified and the percentage of electrification as on 30.9.1974 was 20.7. Orissa constitutes mostly of villages with population below 500 (73%). So far, however, the electrification in Orissa has been done in the villages with population of above 500 and 47.7% villages in this group were electrified as on 31.3.1974. It is on account of this fact that the rural population benefited in Orissa by electricity till the end of the 4th Plan was 36.9%, in spite of such a low percentage of village electrification.

3.9.6. In the field of pumpset energisation, the progress has been still worse. Beginning with a meagre of 257 pumpsets energised as on 31.3.1967, the number energised at the beginning of the 4th Plan, was 477 only. During the 4th Plan, this figure has been increased by six times i.e. to 2,759 energised I.P. Sets/tubewells as on 31.3.1974. During the year 1974-75, from 1.4.1974 to 30.9.1974, however, only 117 additional I.P. Sets/Tubewells were energised.

3.9.7. Orissa is generally an agricultural State and 67,445 sq. Km. area is cultivated out of the total area of about 1,56,000 sq. Km. The State has a forest area of about 50,000 sq. Km. and fallow land covering about 7,000 sq. Km. Except for monsoons, however, it does not have assured irrigation. The average rainfall is between 100-150 Cms., except in the North-East coastal area, which falls in 150-200 Cms. rainfall region. Generally due to scanty rainfall, drought conditions are experienced almost every alternate year and supplemental irrigation is necessary for agriculture. The irrigated area is only 11,500 sq. Km. Regarding ground water sources, the State can be geohydrologically divided into 2 regions, namely (i) Coastal alluvial plain and (ii) Erosional plain. The districts of Mayurbhanj, Keonjhar, ~~Buxar~~ Sambalpur, Dhenkanal, Baudh Khondmals, Bolangir, Kalahandi, Koraput and part of Ganjam come under erosional plain. The district of Balasore, Cuttack, Puri and South Eastern part of Ganjam largely consist of river and coastal alluvial. These topographical features have significant influence in controlling the depth of sub-surface water table in different seasons of the year. The sub-surface water table does not occur at a constant level throughout the year. It stands nearly at ground level or 3 to 5 feet below ground level during the rainy season in alluvial plain and in the low lying areas of erosional plain. In the high lands and ridges, the water table remains at 10' to 15' below ground level. During dry season, the water table stands at 8' to 15' below ground level in alluvial formation in the Coastal districts and in the low lying areas in the Western districts. In the high lands of erosional plain, the water table recedes to a depth of 30' to 40' below ground level. / Sundergarh,

3.9.8. Although considerable ground water potential is available in most of the districts, the consumption of electricity for agricultural purposes has not picked up, as progress of the energisation of irrigation pumpsets/tubewells is very slow. The agricultural consumption was only 0.5% of the total energy consumption in the State during 1972-73. The utilisation of electrical energy for agricultural purposes is low and the agricultural load provides a very low load factor. The total agricultural connected load was only 23.73 MW, compared to the total connected load of 494.85 MW as on 31.3.1973.

3.9.9. Except some major industrial centres and big industries like Steel, Cement, Paper etc., most of which are located in Cuttack, Sambalpur and Sundergarh districts, the State is industrially backward. Small industrial units are scattered, although now efforts are being made to set up a number of industrial estates. The State is economically backward, the per capita income during 1972-73 being only Rs.253.40 (at 1960-61 prices). The percentage of literacy in the State is only 26.2%.

### 3.10. TRIPURA

3.10.1. Tripura is one of the smaller States in the North-Eastern region, having only about 2.84% of the total population of the country. The population density in the State is 149 per sq. Km. The rural population is about 90%. Tribal population is 29% and Harijans constitute about 12% of the total population. This State comprises of three districts as per 1971 census, namely, West Tripura, North Tripura and South Tripura. Majority of the Eastern and Southern parts are hilly, containing most of the tribal population. The basic district-wise data regarding area, population (including tribal), number of villages and progress of rural electrification etc. in Tripura is given below :

#### BASIC DISTRICTWISE DATA FOR TRIPURA ( 1971 CENSUS )

Sl. No.	District	Total Area (Km <sup>2</sup> )	Total population	Tribal population	Total No. of vill-ages	No. of vill-ages elec-trified	Total No. of towns	No. of I.P. Sets energised as on 31.3.1974
1.	West Tripura	3,359	7,51,605	1,98,878	2454	50	2	8
2.	North Tripura	3,541	4,05,009	1,08,547	1133	36	3	27
3.	South Tripura	3,577	3,99,728	1,43,119	1140	17	1	5
Total:		10,477	15,56,342	4,50,544	4727 (4932*)	103*	6*	40

\* As per 1961 Census.

All Towns electrified.

3.10.2 The progress of rural electrification in Tripura is very slow compared to the other States in the country, with only 2.1% of its villages electrified as on 30.9.1974. This State has only diesel generation and on account of the very heavy cost of this mode of generation, intensive utilisation of electricity has not been possible. The Diesel power houses were ostensibly installed for electrifying urban localities and the rural areas surrounding them. Most of the power development was restricted to the urban centres around Agartala, Udaipur, Bogafa, Kailashahar and Dharamnagar, while in the rest of the area, neither any power house, nor any suitable transmission/sub-transmission/distribution networks exist. The State, in 1968, had taken up construction work on Gumti Hydel scheme and on its completion, can avail cheaper hydel power in the near future, which may result in more intensive use of electricity. The total installed capacity is available only at the end of the Third Plan and was 2.393 MW. At the beginning of IV Plan the total installed capacity became 2.89 MW, which is anticipated to rise to 5 MW at the end of IV Plan (31.3.1974). The 1973-74 per capita consumption was 6.1 KWh,

against the All-India average of 95.5 KWh for this year. The total consumption for the year 1972-73 was 9.94 MKWh. Most of the consumption was for domestic (5.4 MKWh) and industrial (2 MKWh) loads. Agricultural consumption was only 2.3% of the total consumption.

3.10.3. 649 Km. of 33 kV and 11 kV and 236 Km of L.T. lines were existing in the State as on 31.3.1973. One 132 kV line (148 Km. long) between Churaibari-Agartala is also existing. In addition, 56 Km. long 66 kV Agartala-Udaipur and 50 Km. long 66 kV Udaipur-Gumti lines are under construction.

3.10.4. Out of a total number of 4,932 villages existing in the State as per 1961 census, only 103 (2.1%) were electrified by the end of the IV Plan, and the rural population benefited by electricity was only 8.0%. 33 harijan bastis have been electrified in the State. The Plan-wise progress of village electrification was very indifferent and no village was electrified till the end of the First Plan. Only 12 villages were electrified during the Second Plan, 19 during the 3rd Plan and 17 during the period 1966-69. During the Fourth Plan 55 additional villages had been electrified, to make 103 villages electrified in the State as on 31.3.1974. 89% of the villages in Tripura have population below 500, but only 0.6% villages in this group are electrified, whereas 13.9% villages having population above 500 are electrified, upto 31.3.1974.

3.10.5. In the field of pumpset energisation too, the progress has been slow. No energised pumpsets were existing till the end of the Third Plan. Only 2 pumpsets were energised during 1966-69 and another 38 during the Fourth Plan, to make 40 pumpsets/tubewells as on 31.3.1974. Tripura has very heavy rainfall- more than 250 Cm. annually, except in the Northern parts where the average rainfall is between 200-250 Cm. South Tripura district is the most backward in respect of pumpsets energisation, and only 5 pumpsets were energised as compared to a total of 40 energised in the State as on 31.3.1974.

3.10.6. The State is mainly agricultural. It can be divided into highland, medium land and low lying areas. The soil of these areas is good for agricultural purposes and crops like cotton, maize, black pepper, cardamom, pulses etc. are grown in the high-land areas, paddy, jute, pulses, sugarcane etc. in the medium type of land and paddy in the low lying lands. Out of 2,415 sq. Km. cultivated area, only 236 sq. Km is irrigated. In spite of suitability of the soil for agricultural purposes, and agriculture being the major vocation of the population, consumption of electricity has been meagre and has not shown any appreciable increasing trend.

3.10.7. Out of the total connected load of 10.15 MW in Tripura, as on 31.3.1973, the agricultural connected load was only 250 KW and the number of consumers was 36. The agricultural consumption was 0.23 MKWh, being only 2.3% of the total consumption for the State during 1972-73. These figures underline the fact that the utilisation of electric energy for agricultural purposes is low and the agricultural load provides a very low load factor, agricultural load factor for the year 1972-73 being only 10%. There is considerable awareness among the farmers for using underground water for agricultural purposes and there were 1000 pumpsets operating with diesel engines as on 31.3.1974.



### 3.11. WEST BENGAL

3.11.1. West Bengal is the second most thickly populated State with a density of 507 persons per sq. Km. having a total area of 87,853 sq. Km. with a population of 44.3 millions. Over 75% of its population live in villages. There are 38,074 villages in West Bengal as per 1971 census. It has got 16 districts. Only 5.7% population is tribal. Harijans constitute about 19.9% of the total population. The district-wise details of area, population, number of villages/towns and progress of rural electrification is given in Annexure XXI.

3.11.2. Geographically, the State of West Bengal is broadly divisible into three distinct units on the basis of physiographic features; (1) Himalayan and sub-Himalayan areas of the Darjeeling and parts of Jalpaiguri districts lying in the extreme north; (2) Crystalline up-lands of Purulia and western fringes of Bankura, Birbhum and Midnapur districts; (3) The low lying alluvial plains of the north, central and southern parts of the State enclosed within the districts of Cooch-Behar, Jalpaiguri, West Dinajpur, Malda, Murshidabad and eastern parts of Burdwan, Bankura, Midnapur and 24-Parganas. From the consideration of power development, however, the districts on the north of Ganga are all backward and no significant power development has taken place there. These, in addition to Darjeeling and Jalpaiguri, are Cooch-Behar, West Dinajpur and Malda districts. The coastal areas consisting of parts of 24-Parganas district and Contai and Tamruk sub-divisions of Midnapur district form a distinct and separate area on account of their saline water conditions.

3.11.3. Except in the deltaic alluvial plains, sinking of tube-wells is very difficult and agricultural pumping as a means of irrigation holds little hope. The district-wise break up at Annexure XXI has been indicated so as to high-light the above regional distinction broadly. From the progress, it will be seen that the State is very much backward in the matter of rural electrification. The progress earlier had been negligible. At the beginning of the 1st Plan, only 386 villages were electrified in the State. During the 1st, 2nd and 3rd Plans respectively additional 167, 367 and 674 villages were electrified. During the three Annual Plans (1966-69) additional 839 villages were electrified. As regards energisation of pumpsets/tubewells, progress upto the 1st Plan is not available. At the end of the 2nd Plan, 56 irrigation pumpsets/tubewells were energised. During the 3rd Plan and three Annual Plans (1966-69), additional 381 and 762 irrigation pumpsets/tubewells respectively were energised. Thus upto 31.3.1969, only 2,433 villages (i.e. 6.5%) were electrified and 1,199 irrigation pumpsets/tubewells energised. During the Fourth Plan, 6,275 additional villages were electrified and 5,336 additional pumpsets/tubewells energised. The latest progress for West Bengal indicates that 9,227(24.0%) villages have been electrified upto 30.9.1974 and 6,789 irrigation pumpsets/tubewells energised upto the end of 31.8.1974. About 58% of the total villages in the State have a population of less than 500 persons and upto March, 1974, only 11.2% of these villages had been electrified. In the population groups of 500 and above, 30.5% villages have been electrified. That

~~is why, even with~~ such a low percentage of village electrification in the State, 36.7% rural population had the benefit of electricity. In addition to electrification of villages, the State have electrified 150 Primary Health Centres and 31 Harijan Bastis till 30.9.1974. From the district-wise progress, it can be seen that the village electrification in the districts of Cooch-Bihar, West Dinajpur, Bankura, Midnapore and Purulia is very poor and less than 20% villages have been electrified upto March, 1974. Most of the pumpsets/tubewells are energised in the districts of Birbhum, Burdwan, Malda, Midnapur, Murshidabad, Nadia, 24-Parganas and Hooghly. The regional imbalance is attributed to the fact that electrification in the State had been mostly confined to those areas where 11 kV distribution lines were already existing with a view to making the best use of available resources.

3.11.4. West Bengal has diverse meteorological condition. From the cold sub-Himalayan region in the north to the humid and deltaic coastal region; from the western hilly regions east of Rajmahal Hills to the Gangetic plains, there is vast difference. Most of the area is in 100-150 Cms. average rainfall region except the sub-Himalayan region in the north and the coastal region in the south, where the average rainfall is 150-200 Cms. Agriculture is the main vocation of rural West Bengal, but the agriculture here is still traditional. It suffers from droughts, floods and scarcity of inputs, affecting the production. To remedy this situation, the State introduced deep tubewells and lift irrigation on a large scale alongwith a system of drainage with a view to bringing reasonable relief from drought and floods and also to facilitate multiple cropping. The potential for development of rural industries in West Bengal still remains almost totally untapped. This is in spite of the fact that the State has a very large number of small engineering industries in and around Calcutta, serving the major industries in this region. There is no dearth of highly developed technical skill. Both the entrepreneur and technical skill could have been made available to rural areas to establish rural industries, had the minimum infra-structure been available. Here again, more than anything else, electricity has to be extensively available and has a major role to play.

3.11.5. In the matter of power development, West Bengal had made some progress in the earlier years, though mainly the power development was for industries. Many major industries are located in the State of West Bengal or D.V.C. area. A little before the 1st Plan, i.e. as on 31.12.1950, the installed capacity was about 522 MW, which rose to 754 MW at the beginning of 3rd Plan. During the 3rd Plan, 314 MW capacity was added and at the beginning of the 4th Plan, the capacity was 1209 MW excluding the share of West Bengal in D.V.C. The installed capacity at the end of the 4th Plan was 1,333 MW. The State has about 1,711 route Kms. of Transmission Lines of 66 kV and above, 17,607 route Kms. of Sub-transmission Lines and 12,894 route Kms. of Distribution Lines below 500 V. The division-wise details of 11 kV and L.T. Lines existing are given in Annexure XXII. Annexure XXIII gives the details of Transmission Lines of 132 kV and above existing/under construction/proposed in West Bengal. Considering the size of the State and the number of villages, this network is not sufficient

to meet the entire rural load. As stated earlier, the rural electrification aspect was not given due importance in the earlier years. Specially, the energisation of pumpsets has not achieved any significant pace. The agricultural consumption in West Bengal was only 0.7% of the total consumption during the year 1972-73. Most of the consumption was in industrial sector (70%) and domestic and commercial (18%). The per capita consumption of electricity in the State, however, was the highest in the Eastern Region and is even more than the all-India average, being 112.7 KWH for the year 1973-74 against the all-India average of 95.5 KWH, this, however, may be on account of high electricity consumption in the /

3.11.6. The situation, however, is improving now. With the efforts made by the State in educating the farmers for supplementing their irrigation needs with the under ground water resources, the demand for agricultural pumpsets may go up. Already the State has ambitious proposals for energisation of shallow tubewells. There were 44,665 I.P. Sets/Tubewells in West Bengal (as on 31.3.72) which were being run with diesel engines as these are located away from the Transmission and Distribution network. These form a ready load for rural electrification provided Transmission and Distribution lines are further extended. However, only 499 applications for agricultural connections were pending with West Bengal State Electricity Board as on 31.3.1973. To speed up their rural electrification, the Board have undertaken extensive load survey work, geohydrological survey etc. and have prepared a number of rural electrification schemes both under Rural Electrification Corporation Programme and under the Normal Development Programme. / metropolitan city of Calcutta. If this consumption were excluded, West Bengal will have a very low per capita consumption.

3.11.7. Two-thirds of the area lying in the State is covered by alluvial formations, where there is immense ground water reserve. Malda and West Dinajpur districts are in the Gangetic plains, but the geohydrological conditions do not hold promise for large scale development of ground water by means of tubewells, although some areas in these districts are suitable for heavy-duty tubewells. In Nadia, Murshidabad and 24-Parganas districts, the area forms the deltaic alluvial plain of Ganga basin and sufficient underground water exists under water-table conditions. In some areas, underground water is available at 15 to 60 M. depth below land surface and these are suitable for large scale development of ground water for irrigation purposes. The quality of water is eminently suitable for these purposes. In Darjeeling, Jalpaiguri and Cooch-Behar districts, the geohydrological conditions restrict large scale development of ground water. However, the quality of ground water here is suitable for agricultural purposes. The Sunderbans area and 24-Parganas districts are in the Bengal Delta and, therefore, except in some areas, do not have good quality of water suitable for irrigation purposes. Bankura and Purulia districts have rocky geological conditions and tubewells in most of the places are not feasible. Birbhum district also is mostly rocky, however, small scale withdrawal of ground water is feasible by means of large diameter dug wells. The water-table in Burdwan and Hooghly districts is very close to land surface and reasonably good discharge is available in the heavy duty irrigation wells in this area. In Midnapur district also, due to the geohydrological conditions, available ground water is not suitable for irrigation purposes, specially in Contai and Tamluk sub-divisions area. In northern part of this district, groundwater is available at water-table conditions.



the IV Plan, in fact, no potential was tapped, although some potential has been tapped during IV Plan and some more sites are being taken up now. The Administration has represented that the need of the day is to have a complete investigation of the total hydro electric potential in the State. For this, they had requested for sanction of a circle for investigation of hydel schemes in Arunachal Pradesh. This proposal was sanctioned and required funds for the same were provided in the programme of the Ministry of Energy, but the funds could not be utilised by the Union Territory Administration as the proposals were received very late.

4.1.4. Lack of adequate organisational set-up for taking up power development is also a factor. So far, the power development in the State is being looked after by a Circle office of the C.P.W.D. In case large scale programme of rural electrification is contemplated for the State, independent and re-inforced organisational set-up will have to be provided depending upon the size of the programme.

4.1.5. Shortage of materials and communication difficulties are also problems in taking up large rural electrification programme. All the construction materials have to be taken from the down country, which not only involves additional cost, but also results in bottlenecks and shortages.

4.1.6. Like the other States in the North Eastern Region, there is a limited working season in this area on account of heavy monsoon and high mountainous and unapproachable regions.

4.1.7. A major factor is the lack of load demand in this area. The population being tribal, there are no fixed habitations and fixed cultivable areas, and shifting cultivation is practised. There is no scope of tubewell irrigation, although there is a little scope for lifting water from hill streams for irrigation and other purposes. Only forest based industries are possible, as there are no other exploited resources.

4.1.8. Cost of construction of transmission and distribution lines in this Union Territory would be high because of difficult terrain and distances involved for transporting the materials from down-country. So far there is no transmission/distribution network in the State and most of the rural electrification work has been done with diesel engines, micro-hydel generating units and in case of some localities, by importing power from contiguous areas in Assam.

#### 4.2. ASSAM

The reasons for slow progress of rural electrification in Assam could be identified as below :-

4.2.1. Shortage of funds for development of power in general and rural electrification in particular is a continued bottleneck. The investments on rural electrification have been negligible till the end of III Plan. Only during the three Annual Plan periods from 1966-69, a sum of Rs. 313 lakhs was invested on rural electrification. During the IV Plan period ( 1969-74 ), additional Rs. 625 lakhs have been invested on rural electrification in Assam. The State Government had reduced the amount of loan over the years and, therefore, Board had to raise funds from market borrowings at high rates of interest for their power development programme. However, during the IV Plan they were able to receive loans from Rural Electrification Corporation and out of Rs. 625 lakhs invested during the period 1969-74, Rs.191 lakhs were from Rural Electrification Corporation financing. Till 31.10.1974, the Corporation has sanctioned 13 schemes for Assam for an estimated cost of Rs. 902.543 lakhs covering electrification of 1,286 villages. Due to various reasons (slow load growth, high cost of works, etc), it may be difficult to prepare schemes which satisfy the viability criteria prescribed by the Corporation, specially for the interior areas. It has been reported by the Board authorities that the Chairman, Rural Electrification Corporation had emphasised the necessity of capital subsidy for rural electrification programme in such difficult areas. Due to these very reasons, other schemes of rural electrification are also not viable. The Board have informed that they are losing roughly Rs. 4,600 per annum for each electrified village in the plains districts of Assam. In the hill districts, the losses to the Board would be higher, as longer transmission and distribution lines are required for electrification. Also, due to difficult terrain the cost of construction is high. The North Cachar Hills and Mikir Hills districts of Assam are not only hilly but have considerable tribal population. The progress of rural electrification in these districts is, therefore, considerably low as compared to other districts. The Assam State Electricity Board have requested that assistance may be given to them on 30% grant and 70% loan basis from the Rural Electrification Corporation for rural electrification in the State in view of the financial losses being incurred by the Board due to this programme. About 95% villages of Assam still remain un-electrified. In North Cachar Hills no village or irrigation pumpset is electrified and in Mikir Hills only 4 out of 1,451 villages (less than 0.3%) and 2 irrigation pumpsets have been electrified till 31.3.1974. To electrify all the remaining unelectrified villages in Assam, would require considerable investment. Even at an average cost of Rs. 75,000 per village (adopted by the Rural Electrification Corporation for their schemes), the cost of electrifying the remaining villages would be more than Rs. 150 crores.

4.2.2. The main reasons for slow load growth are the traditional mode of agriculture, the special topographical features and the heavy rainfall. As already stated, rainfall is confined during 4 to 5 monsoon months only and supplemental irrigation with the

meagre pace of rural electrification,

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help of tubewells and lift irrigation is necessary. This supplemental irrigation, wherever used, has facilitated raising of winter paddy and Rabi crop. As has been seen in already electrified areas, rural electrification would change fundamental mode of agriculture, making it modern. However, so far the development of agricultural load has been slow, although now the irrigation department of the State has taken up huge programme of energising a number of river lift irrigation points. There is considerable scope of tubewell energisation also. River lift irrigation is a special feature of Assam. The industrial development in rural areas has also not been much and there is considerable scope for setting up small industries, specially the forest based industries.

4.2.3. There are a large number of villages with population below 500 in Assam. Electrification of these villages is not only un-economical to the Board, but is also very costly in terms of capital investment. The Board authorities have stated that even if 50% villages of this population range are to be electrified in Assam, it would cost about Rs. 45 crores.

4.2.4. It has been pointed out by the Assam State Electricity Board that even during the year 1974-75 there is likely to be a shortfall of 37 MW in the total firm generating capacity of Assam, Meghalaya and Mizoram. The power demand for 1974-75 has been indicated as 170 MW and the installed capacity as 206 MW, but the firm generating capacity has been indicated as 133 MW only. At the end of V plan in 1978-79 the power demand has been estimated to rise to 500 MW according to the Board and the installed capacity to 266 MW and the firm generating capacity to 215 MW, thereby resulting in a shortfall of 285 MW. However, these figures indicated by the State, show that there is considerable difference between the installed capacity and the firm generating capacity as assessed by the Board. The figures of power demand indicated by the Board also differ from those given in the 9th Annual Electric Power Survey of the Central Electricity Authority, which gives the peak load of Assam, Meghalaya and Mizoram in 1974-75 as 148.6 MW and in the year 1978-79 only 268.6 MW. This assessment of the Power Survey Committee assumes the energisation of the pumpsets @ 3000 per year. To meet the increasing load demand, not only of this State, but of the entire North Eastern Region, there is considerable hydro-electric and some thermal power potential which could be investigated and tapped.

4.2.5. Assam State has a typical situation. It is divided by Brahmaputra in two parts, which during monsoons plays havoc with the State. On both sides of the Brahmaputra start the hilly regions, which present the communication difficulties. Due to heavy rainfall, the State has considerable flora and dense forests. To cover all the villages, an extensive network of Transmission/Distribution lines is required. It will be seen from Annexure-VII that the length of sub-transmission lines (below 66 kV) per village is only 0.3 compared to the all-India average of 1.0. Similarly, the length of Distribution lines (500 V and below) per electrified village is only 3.6 compared to 5.5 for the country as a whole. It has also been pointed out by the

Board authorities that besides constructional delays of the Transmission/Distribution lines in the hilly areas, in case of inter State lines, the construction period depends upon the progress made by the other Electricity Boards/Departments. For example, although Assam State Electricity Board will be able to complete their portion of the 132 kV line from Loktak Project by 1976, yet the portion falling in the Nagaland and Manipur may get delayed. There are several pockets of the State which have not been covered by power network such as Lakhimpur and Goalpara districts. For preparing any extensive Transmission/Distribution programme in the State, it is necessary to take into account the development of power in the entire North-Eastern Region simultaneously, so that the Transmission/Distribution network may coordinate the proposed/prospective generating stations of the entire North-Eastern Region.

4.2.6. Most of the materials required for power development including rural electrification, are not manufactured locally and have to be brought from outside the State. Considerable difficulty is experienced in the availability of the materials like cement and steel and now aluminium too. The State has pointed out difficulties, specially regarding the present procedure of obtaining cement quota and the lack of co-operation between the Railway and the suppliers, which results in lapse of allotted quota. To reduce their dependance on the uncertain supply of steel and cement supports, they have tried to substitute the same by wood poles. But in the climatic conditions obtaining in the State, the wood poles do not last even if treated, as the rot sets in early. Although they are also using wood poles to the extent of their availability, it is stated that the availability of sal poles is very difficult.

4.2.7. Due to communication difficulties, bottlenecks are experienced in the movement of materials and stores. Most of the materials are brought from outside the State, which not only increase the cost of the schemes, but also renders the availability of the same, subject to uncertainty. Moreover, within the State also, roadways network is not extensive and the interior and hilly areas are located far away from good roads. Due to floods and heavy rainfall, movement of materials gets restricted and a chronic transport difficulty has been experienced in the past.

4.2.8. At present all the planning for sub-transmission and normal development in rural electrification is done at Chief Engineer's level, for which a cell headed by a Superintending Engineer, assisted by two Executive Engineers and four Assistant Engineers, has been functioning. This has recently been augmented by one more Executive Engineer in the cell and two Assistant Engineers, one each attached to the Additional Chief Engineers at Gauhati and Jorhat. The field divisions, which were headed by Executive Engineers, are engaged in construction, including rural electrification and its operation & maintenance. The organisation needs re-inforcement, specially, if large rural electrification programme has to be undertaken. Separate organisation for handling the planning, design and construction of rural electrification schemes should be created, if necessary.

4.2.9. The working season in the State is limited on account of heavy monsoon, and also due to the continuing flood conditions and lack of sufficient communication facilities, specially on the two sides of Brahmaputra.



#### 4.3. BIHAR

From what has been discussed in Chapter III, it could be seen that the reasons for slow progress in the Bihar can be broadly identified to be as below :-

4.3.1. Development of power in this State has suffered on account of less interest paid by the Government/Electricity Board during earlier Plan Years and also due to various operational difficulties, which have restricted the utilisation of the full installed capacities of the power houses. The installed capacity has increased from 45 MW in December, 1951 to 604 MW in March, 1974. Although, the number of electrified villages has increased from 4 in March, 1951 to 9,775 in March, 1974 and pumpsets from 47 to 96,922, the consumption in agricultural sector as a percentage of the total power consumption, has not increased. ~~In 1951, the ~~xxxxxx~~ consumption, has not increased.~~ In 1951, the agricultural consumption was 4.23% of the total energy sales whereas for the year 1972-73, this percentage came down to 2.8%. The per capita consumption of electricity, figures for which are available for 1960-61 onwards only, was 41.5 in 1960-61 and increased to 68.6 in 1973-74. The achievements in the field of rural electrification have been in the recent years, mainly during the Fourth Plan. /Agricultural

4.3.2. Due to geographical condition of the State and absence of sufficient communication facilities, some-how the areas North of Ganga, known as North Bihar, has remained backward. This is the area which is densely populated, very under-developed, subject to floods and droughts (depending on the rain-fall) and is basically an agricultural area. Most of the power development is limited to South Bihar. Only Kosi, and now recently Barauni, are the power houses located in this area. Tenughat and some other major Thermal Stations are under construction/execution which may remedy this situation. The six tribal districts of Chhota Nagpur division form another backward pocket of the State. The regional imbalance in the growth of rural electrification will be clear from Annexure XVI, wherefrom it will be seen that out of 19,239 villages in North Bihar area, only 2,349 (12.2%) are electrified, whereas in South Bihar, out of 19,286 villages, 5,881 (30.4%) are electrified as on 31.3.1974. In the 6 tribal districts of Chhota Nagpur region, out of the 29,120 villages, 1,545 (5.31%) are electrified. One of the reasons of slow development of rural electrification in North Bihar as well as Chhota Nagpur region, in addition to absence of sufficient power availability, may be the absence of load demand. Being an agricultural area, North Bihar depends on rainfall. Excessive rain-fall means floods and absence of rain-fall means droughts for this area. As the economic condition of the people is poor, there has not been a demand for energised irrigation tubewells so far, which needs considerable investment. The absence of load demand also is a major factor in case of tribal and hilly districts of South Bihar. Whether on account of nature of the terrain, or the agricultural habits of the population, the need for irrigation, especially energised irrigation pumpsets, has not been sufficient as to

develop into a substantial load demand. On account of absence of any agricultural load in these tribal and rural districts, and the disinterest to have electricity for domestic purposes for various reasons, including their inability to pay for the same, enough load demand has not been able to catch up in these areas.

4.3.3. Another reason leading to this regional imbalance has been the absence of proper transmission/distribution network in Bihar. From Annexure VII, it will be seen that the total length of transmission lines per 100 sq. Km. of the area is only 1.6, compared to 2.7 for the country. For sub-transmission and distribution lines, the figures for Bihar are 0.5 and 4.1, compared to 1.0 and 5.5 for the country as a whole. Most of the power houses are located in Damodar Valley area and the major transmission system naturally lies there. Except in recent years, there were no major transmission lines in North Bihar. Construction of major transmission lines is directly linked to the construction of major power stations, and with setting up of new power houses at Barauni Extension, Tenughat and other places in North Bihar, a better transmission and distribution system can be expected. Rural electrification ~~schemes~~ do not provide adequate returns if long transmission/distribution lines are required. Where transmission and sub-transmission system up to 33 kV is not adequate in some areas, much longer lengths of distribution lines would be required, which will inflate the cost of the rural electrification schemes and also lead to increase in the line losses. In such areas, it is very difficult to prepare viable schemes and consequently these areas have retarded growth of rural electrification.

#### / schemes

4.3.4. Economically, Bihar is a very backward State. Percentage of literacy is only 20%. Most of the development is limited to a few prosperous areas or industrial centres. In addition to absence of extensive transmission and distribution system and lack of rural load demand, the main reason for backwardness is that suitable infra-structure is not available, as all the developmental sectors seem to have lagged behind. Although sufficient underground water is available in the entire Gangetic plain, most of the rural electrification has been restricted to the three districts of Patna, Gaya and Shahabad only. Availability of under-ground water in the hill districts of Chhota Nagpur Region is, however, restricted. The demand for agricultural connections only points to this regional imbalance. As on 31.3.1974, out of 22,646 pending applications for agricultural connections in Bihar, 13,786 related to these three districts of Patna, Gaya and Shahabad and for the remaining districts, which contain about 79% population of the State, this number was only 8,860.

4.3.5. Another reason contributing to slow progress has been the lack of suitable organisation in the State for undertaking major power development including rural electrification programme. Bihar State Electricity Board was constituted on 1st April, 1958. However, since major generation and transmission system was with the Damodar Valley Corporation, the State Electricity Board had only a few power stations and a small transmission/distribution

system in the State. In the field of rural electrification, less attention paid earlier, suggests to the absence of suitable rural electrification organisation to plan and implement large rural electrification programmes. The position has improved in the recent years with the Bihar Electricity Board taking up major Thermal Power Houses and construction of major lines. The organisation has also been strengthened in the field of rural electrification. Now the State has a Director (Rural Electrification) at headquarters, incharge of investigation, planning and preparation of rural electrification schemes for the State. However, the organisation in the field is still inadequate. The Board have suggested creation of an organisation under a Chief Engineer with separate construction circles, divisions and sub-divisions, exclusively for rural electrification works.

4.3.6. One of the reasons for the slow progress has been the absence of sufficient finances for power sector, including rural electrification. During earlier Plan periods particularly, the investments on power, as well as rural electrification, have been very small. It has been brought to the notice of the Committee that sufficient funds have not been made available by the State Govt. while finalising the State Plans. Even from the Rural Electrification Corporation, during the Fourth Plan upto 31.3.1974, Bihar has been able to get 43 schemes sanctioned, estimated to cost Rs. 28.47 crores, for a sanctioned loan amount of Rs.25.03 crores. The actual expenditure during the Fourth Plan from the Rural Electrification Corporation financing has been Rs.13.00 crores only, compared to Rs. 19.27 crores from State Plan and Rs. 2.89 crores from other sources. Another 11 schemes for an estimated cost of Rs. 5.09 crores and sanctioned loan amount of Rs. 4.14 crores have been sanctioned from 1.4.1974 to 31.10.1974. As per the Draft V Plan, the outlay on rural electrification for Bihar is Rs. 45 crores under Minimum Needs Programme and Rs. 15 crores under Normal State Plan outlay. In addition, loans may also be available from Rural Electrification Corporation. Since both Rural Electrification Corporation and Minimum Needs Programme loans are project-based and area-oriented, meant for specific purposes and areas, the free loan available to the State for development of rural electrification including extensions and improvement in areas already electrified, is inadequate. As a result of the restricted availability of funds and absence of any other resources to finance their rural electrification programme, the State has been compelled to reduce their targets. In their V Plan proposal, the State had envisaged much higher targets to wipe out the deficit in the field of rural electrification. However, subsequently on reviewing the resources position and their availability, the targets have been brought down to be in line with the available funds.

4.3.7. Another related problem with the shortage of funds has been indicated by the State about the difficulties experienced in regard to Rural Electrification Corporation funds. In rural electrification schemes, cost of materials constitutes about 80% of the cost of the estimate. Advance planning is a must for

timely availability of material, especially when all the strategic materials are in short supply. The Rural Electrification Corporation, however, advance only 25% of the value of the scheme sanctioned as the first instalment, which is not sufficient to cover the cost of material. This results in irregular/incomplete arrangements for the materials, which affects the completion of the schemes and delays the works. Another problem with rural electrification loans is that the subsequent instalments are released against assessment of the specified physical progress. On account of various factors, including irregular supply of materials etc., either works are not completed, or due to poor economic conditions of the people, the anticipated number of connections do not come up. This results in delay in the release of the second and subsequent instalments, which further affects the progress of the works. This becomes a vicious circle as delay in the release of the subsequent instalments affects the progress and the retarded progress means delay in the release of subsequent instalments.

Most of the outlays in the V Plan are going to be routed through Rural Electrification Corporation, i.e. Minimum Needs Programme outlay of Rs. 272 crores and Rural Electrification Corporation outlay of Rs. 400 crores. The above difficulties in the release of instalments experienced by the State Electricity Board will have very serious effect not only on their performance and achievement, but also on the rural electrification programmes of all the other Boards who will get finances from Rural Electrification Corporation. These difficulties may not have been very serious during the Fourth Plan because the expenditure on rural electrification from Rural Electrification Corporation sources during the Fourth Plan formed only about 25% of the total expenditure on Rural Electrification. However, during the V Plan, more than 60% outlay is likely to be routed through this Corporation.

4.3.8. Another reason which the Bihar State Electricity Board has continuously indicated to be a major impediment in undertaking extensive rural electrification and other power development programme is the shortage of materials felt by the State from time to time such as aluminium, cement, steel, transformer oil etc. It has been the contention of the Board that the shortfall in the achievement of the targets during the recent years has been mainly on account of this reason.

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#### 4.4. MANIPUR

The reasons for slow progress of rural electrification in this State can be identified as follows :-

4.4.1. Manipur got State-hood in January, 1972. Earlier, it was a Union Territory. This, possibly, was a reason for less attention paid to power development and rural electrification in this Territory.

4.4.2. This State is mainly rural. More than 89% area is hilly and about 2/3rd area covered with forests. The villages are scattered, and have small population. More than 74% villages have population below 500. For electrification of villages, what is required is an extensive network of transmission and distribution lines, which is lacking at present in this State. On account of hilly/forest terrain, extension of T & D lines is difficult and costly. The length of Sub-transmission lines in the State per village is 0.4, compared to 1.0 in the country and length of distribution lines per electrified village is only 3.6, compared to the all-India figure of 5.5. Any scheme of rural electrification, therefore, becomes very costly and is not economically viable.

4.4.3. Supply of power in Manipur is affected mostly through diesel generating sets, which are pretty old and cannot give full output. In spite of using all the available sets in the State, and by importing 500-1000 KW from Loktak Project Construction Power House, they are unable to meet the existing demand of the valley and the hills. As a result of this, they are unable to give power to more rural areas although, electric lines and substations are already laid in about 30 villages. This position is not likely to improve until Loktak Hydro-Electric Project is commissioned. To give respite to the public, installation of 8x248 MW diesel generating sets is in progress and Manipur Government expect to incur an expenditure of about Rs.32.42 lakhs on this account during the year 1974-75. Construction of Leimakhong Micro-hydel Schemes is nearing completion and a few other micro-hydel schemes are under investigation.

4.4.4. Even for the operation of existing power houses, they are feeling difficulty in procurement of fuel oil and lubricating oil from the suppliers in North Eastern area. Their annual requirement of fuel oil is about 2,000 KL of L.D. oil, 4,000 KL of HSD oil and 250 KL of lubricating oil. The supplies of these are not regular, which effect their power supply programme. The suppliers are Indian Oil Company and the Assam Oil Company. The State Government had also indicated scarce materials required for the power schemes during the V Plan, which include Aluminium, Steel, Cement, Zinc, etc.

4.4.5. High cost of rural electrification is another reason, which coupled with shortage of funds, has retarded the growth of rural electrification in the State. The State Government have informed that the cost of electrification per village was about Rs. 75,000 earlier. This high cost was attributed to sparsely located villages in the Valley and in the Hills, which require long lengths of transmission and sub-transmission lines. Even this cost has now gone up and the present cost of electrification per village works out to about Rs. 1.5 lakhs. The cost inflation has been mostly on account of the increase in the cost of materials such as steel, zinc, copper, oil, etc. and labour. On account of funds shortage, they are sometimes not able to run their diesel sets, as the cost of oil has considerably gone up.

4.4.6. The cost of diesel generation is very high and it has gone up further due to recent increases in the oil costs. Since the generating sets are old, the O & M charges are very high. The tariffs have not been increased. Since most of the connections are domestic, all the schemes of electrification become unremunerative. No respite is possible unless first set of Loktak is commissioned and some small micro hydel schemes, which are mainly extensions of the existing projects, are completed. Even in Loktak Project there are a number of problems, which are delaying its completion. These problems relate to Civil Engineering problems, funds shortage, cement shortage, etc.

4.4.7. For reducing the cost of rural electrification, extensive use of wood poles was proposed to be made and the State wanted to set-up a wood treatment plant in Manipur, the cost of which was estimated as Rs. 10 lakhs. However, provision for this item could not be made during V Plan. If this plant is installed, rural electrification costs may be brought down by using wood poles, instead of steel poles, which have to be brought from down-country over long distances.

4.4.8. The State Government have represented that some of their projects for 132 kV and 33 kV sub-stations, have not been cleared. In respect of some of the micro hydel schemes and rural electrification ~~schemes~~, the State have yet to prepare the schemes. The State proposes to take up investigation of Tuivai Hydro Project ( 200 MW ), Barak Hydro Project ( 100 MW ), Kungpi and Longwal Lok (Stage II of Loktak) during the V Plan, which will cost about Rs. 1.2 crores. The

2 schemes

funds for investigation of these projects have already been allocated by the North Eastern Council. However, in respect of rural electrification, the State have represented that under the Minimum Needs Programme, an allocation of Rs. 2 crores for electrification of 650 villages is insufficient. At the rate of present day cost of village electrification, which is Rs. 1.5 lakh per village, the provision should be of the order of Rs. 10 crores. So far, there are no energised irrigation pumpsets in this State. Now, however, the State have undertaken this work and one medium irrigation project and several minor irrigation projects (including lift irrigation schemes) are proposed to be undertaken. Conversion of existing diesel operated lift irrigation points is also proposed, provided power is available. Private pumpsets may also be energised during the V Plan. Therefore, provision for pumpset energisation also has to be made, in addition to the provision for village electrification.

4.4.9. There is no separate organisation for rural electrification in the State and these works are taken up by the project division of the Electricity Department. The State was already short of experienced officers of the rank of Executive Engineers for the field divisions. There is also shortage of staff at middle technical level. Considerable strengthening of the organisation is considered necessary.



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4.5. MEGHALAYA

Meghalaya earlier formed part of Assam State and therefore the reasons of slow progress of rural electrification in this State are similar to those mentioned earlier in para 4.2 for Assam. These have, therefore, been discussed briefly. In addition, there are some reasons which specially apply to this State, as it is hilly and tribal. These have also been discussed.

4.5.1. Shortage of funds for development of power and other developmental programmes in this State including rural electrification has been a continued bottleneck. In fact, the State has remained economically backward for long. It was made into a separate State in January, 1972. For rural electrification upto the beginning of IV Plan, the investment has been negligible. Assam State Electricity Board, ~~xxxx~~ earlier looked after power development in this State also. ~~xxxxxxxxxxxxxxxxxxxx~~ During the IV Plan the total investment on rural electrification in Meghalaya was ~~xxxxxxxxxxxxxxxxxxxx~~ about Rs. 141 lakhs. Investment figures for the periods before the IV Plan are not available separately. The difficulty regarding shortage of funds, however, to some extent, has been relived by the availability of Rural Electrification Corporation loans to this State and so far, the Corporation have sanctioned 2 schemes of rural electrification for Meghalaya for an estimated cost of Rs. 49.387 lakhs.

4.5.2. The Transmission/Distribution network of the State is very scanty and since it is a hilly State, long lengths of these lines are required for electrification of the villages. There are difficulties in construction of transmission/distribution lines in such areas of difficult terrain. On both these counts, the cost of village electrification goes up considerably and the schemes prepared are not economically viable. Assam State Electricity Board have informed that they are losing more than Rs. 7600/- per annum for each electrified village in Meghalaya. They have suggested that funds for rural electrification in Meghalaya should be on the basis of 90% grant and 10% loan.

4.5.3. Another reason is the low load demand for electricity in the rural areas of the State. This is mainly a tribal State and on account of their traditional modes of living, electricity has not yet made its mark. Consequently, there is little demand for rural electrification. Being hilly area and also an area of very heavy rainfall, the demand for pumpsets/tubewells for irrigation is absent and the only loads can be the rural industrial loads and some lift irrigation points on hilly streams. Another reason for low load demand is the large number of villages having less than 500 population. The scattered nature of the villages also adds up to the cost. Electrification of such villages is un-economical and is also costly in terms of capital investment. Assam State Electricity Board have informed



that even if only 50% villages of the population range of below 500 are to be electrified in Meghalaya, a capital of Rs. 162 crores may be required.

4.5.4. Assam State Elec. Board have indicated that shortage of power is another difficulty. This point has been dealt in detail earlier in para 4.2.4. It is interesting to note that some of the major hydel schemes of Assam, already existing or under construction are in the Meghalaya State, such as Umtru, Umiam etc. In addition to these, the State has considerable hydro potential such as extensions of Umiaw-Upper Khri-Umai Umtru stage IV, Kynshi hydel scheme etc. In addition, there is considerable thermal potential in the Garo hills near Dainadubi. Development of all these power potentials, which need considerable investment, will go a long way towards the prosperity of the State. The Minister Incharge of Power of Meghalaya had in one of his letters stressed the need of providing more power to this area, as shortfall of power availability in North East Region is apparently going to be more serious year by year and very little has been done for increasing the power generation.

4.5.5. Being hilly, there are considerable communication difficulties. Since most of the materials for construction works have to be brought from the down country, considerable difficulty is faced in their movement and a chronic transport bottleneck has been experienced in the past. Movement of materials over such areas of difficult terrain, not only increases the cost but sometimes renders their availability uncertain, which results in hold-up in the construction works.

4.5.6. Assam State Electricity Board have also indicated difficulty in the availability of materials like steel, cement and aluminium etc. These difficulties have already been discussed in para 4.2.6.

4.5.7. As already stated earlier, Meghalaya State Elec. Board has been constituted only very recently - in January, 1975. It will take some time for the organisation to develop and handle the programmes like rural electrification effectively. Already there is a shortage of skilled hands, skilled technicians and experienced engineers who can efficiently man the organisation for power development in the State including rural electrification. In many cases the engineers and technicians are reluctant to work in the difficult areas in the interior. Expeditionary development of suitable organisations for power development, as well as rural electrification in the State will considerably perk up the pace of rural electrification.

4.5.8. On account of heavy monsoon and limited communication facilities, the working season is restricted in this State also.

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4.6. MIZORAM

The reasons for slow progress are as under :-

4.6.1. This is predominantly a rural tribal area, situated in one of the most difficult terrains in the country. On account of the economic backwardness of the people and their traditional habits of living and as also the modes of agriculture, there has not been much demand of electricity except in the urban centres.

4.6.2. The villages are scattered and the population density is very low (15.8 per sq. Km.). The number of villages with less than 500 population is very high (78%). No village in this population group has been electrified. Electrification of such villages needs heavy capital investment and the low load demands make such schemes economically non-viable. Assam State Electricity Board have informed that even if only 50% villages in the population range of below 500 are to be electrified, this may need a capital investment of about Rs. 20 crores.

4.6.3. The difficult terrain and absence of suitable communication facilities have restricted the utilisation of the available hydro-electric potential in the State, with the result that most of the generation is from diesel, which is considerably costly.

4.6.4. Not only rural electrification has been neglected during earlier years, but the implementation of various power schemes has also been very slow. The State Government has stated that a number of cases are pending either for investigation or at project stage:

- (i) North Eastern Council has recommended a sum of Rs. 2 lakhs for investigation of Kolodyne river. Another sum of Rs. 5 lakhs has been recommended by the Council for the year 1974-75. The Secretary, N.E.C. had also written to the Home Ministry for arranging Rs. 2 lakhs for Kolodyne Hydrel Project during 1973-74 but Mizoram Govt. have not been communicated any decision in this regard. No funds have so far been allocated for the year 1974-75 also.
- (ii) Some other hydro-electric sites of Tipaimuk, Tuivai and Tail Race development of Logtak (Longwellock) were mentioned in the meeting of the technical power committee of the N.E.C. However, no action appears to have been taken on these.

Even for the year 1974-75, although Rs. 1.6 lakhs has been provided for hydrological investigations, the detailed schemes/project reports indicating the sites and rivers which are to be investigated had not been decided. No action has been taken to investigate the feasibility of taking up micro hydel projects.

- (iii) The Assam State Electricity Board were so far looking after power development in Mizoram. However, recently Mizoram Government have created an Electricity Department with effect from 21.1.1975, which will hence-forth look after power development, including rural electrification, in this Union Territory. With this change, it is felt that the difficulty of lack of suitable organisational set-up is likely to get reduced.

4.6.5. Shortage of materials is another difficulty pointed out by the State, specially materials like steel and cement. Also, it was indicated that non-availability of diesel generating sets has hampered the implementation of the schemes in some cases. Another related problem was the delay in construction of buildings for power houses and staff.

4.6.6. As would have been noticed from Chapter III, the main reason which hampers rapid rural electrification in the State is the absence of any suitable and extensive transmission/distribution net-work. With the difficult terrain and related communication difficulties, construction of transmission lines is also made costly, specially in the interior areas.

4.6.7. Assam State Electricity Board had indicated that shortage of power is another reason for rapid development of rural electrification as in the case of Assam and Meghalaya.

4.6.8. Financial strain has also been a factor in restricting the growth of rural electrification and power development in this Union Territory, as sufficient funds are not available for this purpose. Mizoram being a Union Territory, cannot legally avail of the loans from Rural Electrification Corporation and consequently so far no scheme under the Corporation financing has been sanctioned for it.

4.6.9. On account of the State being situated away from the manufacturing and marketing centres of the country, the difficult terrain, the inadequate communication facilities, the inclemental and severe weather conditions, etc., the cost of materials required for construction goes up. These very bottlenecks sometimes create temporary or long-time shortage of these materials.

4.6.10. Like other States of this Region, on account of the heavy rainfall, the inclemental weather conditions, the difficult terrain and the communication bottlenecks, the total working season here is short.

#### 4.7. NAGALAND

The reasons of slow progress of rural electrification in the State can be attributed to the following :

4.7.1. The late start in the power development, as well as in other developmental sectors has resulted in the absence of necessary infra-structure for creating load demand in rural areas and making rural electrification schemes viable. The State is lacking in basic facilities like good road communication, industrial and agricultural consumers, etc. There is hardly any generation in the State and almost all the power requirement is purchased from neighbouring States. There is some hydro potential, but detailed investigations are yet to be made. No proper organisation was existing earlier. The difficult terrain and the tribal nature of population and the high percentage of villages with small population (more than 71% villages have less than 500 population) also, prohibit preparation of viable rural electrification schemes.

4.7.2. Suitable transmission and distribution system is lacking. In fact, earlier there was little power development and consequently, less need for any extensive transmission/distribution system. Not only the sub-transmission system has to be strengthened, but also the transmission system of 132 kV and above has to be provided in the State. Difficulties faced in the construction of transmission lines are the difficult terrain, the severe climatic conditions, remoteness of the State from manufacturing and marketing centres, from where essential stores are procured; which all retard the progress of these works.

4.7.3. High cost of rural electrification on account of communication difficulties and long transportation of materials required, has also contributed towards the slow progress. Mostly steel supports are being used on account of their easy transportability, but this increases the cost. Another reason of high cost of village electrification is that the villages in Nagaland are situated on hill tops and are scattered over wide areas which necessitates long sub-transmission/distribution lines. The lack of communication system is also because of the retarded growth in other development sectors. The O & M expenditure is also very high and the tariffs are not commensurate with it. It has been stated by the State authorities that during 1972-73 the revenue receipts were hardly 50% of the O & M expenditure.

4.7.4. Although, shortage of materials like aluminium, steel, cement and transformers, etc. has not held up their rural electrification programme in the past, such shortages are likely to affect their Rural Electrification programme in future.

4.7.5. Constraint on financial resources is one of the major reasons for slow growth of rural electrification as sufficient funds could not be made available to this sector. During the 4th Plan, a scheme was formulated for electrification of 56 administrative centres and villages, at an estimated cost of Rs. 72.83 lakhs. Although, the Planning Commission approved the scheme, no separate allocation was made for the same in the 4th Plan and the State was advised to finance the scheme through savings from other schemes. This has resulted in the scheme spilling over to the 5th Plan. The availability of finances during the 5th Plan, although not yet fully known, is also likely to be similar.

4.7.6. Organisational inadequacy is also a reason for slow power development which has also been accepted by the State and steps are already afoot to strengthen the existing set-up. Already extension of the Electricity Department by adding two more divisions is under consideration and the more strengthening may be necessary depending upon the size of the programme undertaken. The State has mentioned that on account of paucity of technical personnel, at one stage, they had suggested to the C.W. & P.C. / Ministry of Energy that detailed investigation and construction of Doyang Hydel Project may be taken up by the Centre as a Central Project. However, the Central Government had not agreed to this.

4.7.7. Delay in clearance of their schemes is also stated to be a reason for slow power development. The State has under construction/investigation several micro hydel schemes in addition to the schemes for rural electrification/augmentation of Transmission and Distribution works.

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#### 4.8. ORISSA

Reasons for slow progress of rural electrification in Orissa can be identified broadly as below :-

4.8.1. From the progress of Plan-wise increase in the installed capacity and Plan-wise progress of village electrification and pumpset energisation (Annexure VI, VIII & IX), it will be clear that little interest was paid to the aspect of power development in general and rural electrification in particular, during the earlier plan years. The investment on rural electrification has been very meagre considering the size of the State. Only some reasonable progress has been made during the IV Plan, when about Rs. 29 crores are anticipated to be invested on rural electrification. Even now, most of the power in Orissa is utilised by a few major industries set-up in the State. In 1966-67, of the total energy consumption of 767 MKWH, 86.57% was consumed by major industries, irrigation (together with de-watering) farming only about 0.17% of the total energy consumption. During the year 1972-73, of the total energy consumption of 1,656.54 MKWH, 88.1% was consumed by the major industries, irrigation (together with de-watering) consuming only about 0.5%. There are only few energised pumpsets/tubewells/lift irrigation points in the State. The number of energised pumpsets per electrified village at the end of the IV Plan was only about 0.31, compared to all-India figure of 15.7.

4.8.2. Orissa has substantial tribal and scheduled caste population. The districts of Mayurbhanj, Sundergarh and Koraput, each have more than 50% tribal population. In addition, three blocks in Sambalpur, eight in Keonjhar, twelve in Baudhkhondmals (Phulbani), five in Ganjam, one in Balasore and two in Kalahandi are also tribal blocks. The economic condition of the tribals in Orissa is very bad and there has not been much developmental activity. The rural electrification in such areas has suffered for want of load demand. Most of the progress has been in the coastal districts of Cuttack, Bhenkanal and Ganjam. Except the coastal areas, in almost all the other districts, a major part is covered by forest and hilly terrain.

4.8.3. The villages in Orissa are scattered and have small population. About 78% villages have population below 500. In Koraput district, about 50% villages are inhabited by less than 200 people and more than 60% of the remaining villages are inhabited by less than 500 persons. Similarly Baudhkhondmals (Phulbani) has nearly 80% of villages which are inhabited by less than 200 population. Keonjhar district has more than 75% villages with less than 200 population and more than 40% villages with population between 200-500. The density of population in these districts is very small. The villages are scattered. Consequently, heavy expenditure is required to be incurred for providing necessary infra-structure for any developmental activity including rural electrification, which is not supported by the returns as the potential for development is very low. In case of rural electrification particularly, long sub-transmission/distribution lines would be necessary and the revenue returns would not justify the

investment. As there is stringency of financial resources, this may be a reason for lesser investment made by the Orissa State Electricity Board on rural electrification in earlier years. However, during the IV Plan they were able to get loan finances from the Rural Electrification Corporation. Rural Electrification Corporation has so far sanctioned 46 schemes for Orissa for an estimated cost of Rs. 24.22 crores. That is why, the Orissa State Electricity Board have in recent past electrified a large number of villages, giving mainly domestic connections and have made large capital investments. But on account of poor revenue returns from rural areas, the Board have incurred financial losses to the tune of Rs. 2 to 3 crores per year. The State Government had, appreciating this position, subsidised the Board to the tune of Rs. 90 lakhs during the year 1972-73 and Rs. 104 lakhs during 1973-74. But this subsidy has not been able to fully compensate the loss. The loss to the Board is further likely to go up when electrification of these backward areas under the Minimum Needs Programme during the V Plan is taken up.

4.8.4. The coastal districts are subject to cyclones almost every year. The flood devastation in coastal areas is also immense. In addition to floods, droughts also are quite frequent in the State of Orissa and these natural calamities and ~~harvest~~ affect the rural economy considerably and are responsible for the poor socio-economic development in this State. These factors keep the economic condition of the State at low level. The State is not able to take up extensive developmental programmes, including rural electrification, on one hand and economically backward rural masses are also not able to afford these facilities, specially in view of insufficient loan facilities from Commercial Banks in rural areas. This is one reason that sufficient industrial and agricultural connections have not come up in rural areas. Z handicaps

4.8.5. As already mentioned above, the programme of energisation of pumpsets has specially been retarded in this State. The number of pumpsets per electrified village is as low as 0.07 in Puri district. The underground water potential has not been exploited fully, and even the geohydrological surveys have not been completed for the whole State. Geohydrological surveys have been carried out only in about 1/3rd area of the State. Out of the total rainfall in the State, about 21 million acre feet of water can be utilised by lifting from underground sources for agricultural development. However, more than 80% of the area is hard rock where only open wells are possible. Dug wells are possible only in coastal areas. The State Ground Water Cell have now established four Hydrology Divisions. Based on the preliminary data, a scheme for undertaking ground water development over an area of 12,000 sq. miles has been drawn up by the Orissa Lift Irrigation Corporation, which includes installation of 1,000 deep tubewells, 5,000 shallow tubewells and 60,000 open wells, to be completed at a cost of Rs. 51 crores

and to benefit an area of 6.5 lakh acres of land in different Districts. The scheme is under negotiation for financing from World Bank. More Hydrology Divisions are necessary to cover the entire State and coordination of various agencies like Small Farmers' Development Agency, Marginal Farmers' Agency, Tribal Development Agency, Agricultural Financing Corporation, Agricultural Re-financing Corporation, Financing Banks etc. is also necessary, so that funds both to the Orissa Lift Irrigation Corporation/State Electricity Board, as well as to the farmers for purchase of equipment etc., are available. In this connection the State had suggested that the Central Government may provide matching grants for ground water survey work and for preparation of schemes for pumpsets energisation programme, to enable them to get finances from World Bank.

4.8.6. Another reason for slow agricultural load growth is the traditional modes of agriculture followed by tribals and others. Also, because of temporary structure of the houses in which most of the population lives, electrification is not possible. In some areas, part of the irrigation needs are being met from conventional irrigation, but still there is a considerable scope for supplementing this with under-ground water.

4.8.7. Because of the vastness of the State, and most of the areas being covered with difficult terrain like hilly/forest areas, the transmission/distribution network of the State has not developed fully. From Annexure VII it will be seen that the length of sub-transmission lines per village is only 0.3, compared to 1.0 for the country as a whole. The length of L.T. lines per electrified village is only 1.3 compared to all-India figure of 5.5. To electrify the scattered villages, considerably long lengths of transmission and sub-transmission lines will be necessary, which will increase the total cost of such schemes.

4.8.8. Although there are some major industries, the rural industrial development has also not come up in this State. In the absence of agricultural load, it is only rural industrial load which can make the rural electrification viable. This is specially so in tribal and hilly areas. Now the State proposes to set-up some industrial estates in districts of Cuttack, Kalahandi, Keonjhar, Boudhkhondmals, Koraput, Dhenkanal and Sundergarh. But these are all scattered and more industrial estates are necessary and their setting up may be coordinated with the rural electrification programme. In this connection, the State Government have indicated that for taking up a large rural industrial programme, considerable capital investment is necessary which is not available.



4.8.9. Non-availability of some scarce materials like Cement, Steel and Aluminium have also affected the rural electrification programme. The effect of Aluminium shortage is apparent from the fact that about 1,000 Kms. 11 kV lines, poles for which have already been erected during 1973-74, are standing without conductor. About 2,000 villages already electrified during the last year, are without adequate L.T. lines network and supply to consumers can not be given. Cement is another scarce material. Although Orissa has got two Cement Factories, sometimes, the cement allocation to the State Electricity Board is made from factories outside the State, which makes the cement supply uncertain. Transformer oil is another material which is not easily available.

4.8.10. Due to recent price increases and un-steady market conditions, the cost of raw materials has increased, increasing the estimates of rural electrification by 25-30% in some cases. The limited resources available under the Plan allocations, which are based on previous year's performance are, therefore, inadequate to meet the targets. In case of Rural Electrification Corporation projects specially, the increased costs do not allow even the meagre economic returns envisaged in the original estimates. Also, due to the increased cost of materials and works, further work on the schemes can not be done and as a result the Board are not able to give connections, although parts of the schemes are completed. This affects the release of subsequent instalment of the Corporation loans. Another difficulty pointed out by the State is that the service connections in backward areas do not come up as envisaged in the original estimates. These are on account of various reasons like poor economic conditions, natural calamities like floods, cyclones, droughts; or insufficient loan facilities available to the farmers for completing their parts of works. In such cases also, this affects the release of the second and subsequent instalment of the loans and the Board is not able to continue further work on the schemes. This makes the investment already made infructuous.

4.8.11. The Board have pointed out another difficulty particularly in regard to the Minimum Needs Programme loan during the V Plan. Some of the more backward districts of Orissa like Baudhkhondmals, Koraput, etc., are included in this programme. An outlay of Rs. 18.92 crores is provided. The criteria and interest rates laid down by the Rural Electrification Corporation for the Minimum Needs Programme loans are stated to be very stringent, considering the low growth potential and economic conditions of the people in Orissa.

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#### 4.9. TRIPURA

The reasons for slow progress of rural electrification in Tripura can be attributed to the following :

4.9.1. The paucity of power in the State is one of the main reasons of the slow progress. The development of power in the State has been retarded. Cost of electricity is very high as most of the generation is diesel based and this has prevented its wide application in many fields. The present total installed capacity of the State is 5 MW plus the purchases from the neighbouring States. The demand, however, is 12 MW. On account of non-completion of the inter-State transmission system, Assam State Electricity Board is not in a position to supply the agreed amount of bulk power to this State. Consequently, the rural electrification schemes proposed could not be taken up. The State Government have informed that their transmission and distribution system within the State is adequate and is not being fully utilised due to power shortage. A massive programme of rural electrification can be undertaken by the State by making extensions of only small lengths of 11 kV lines and 11/0.4 kV substations.

4.9.2. Shortage of materials like steel, cement, etc. have affected not only the rural electrification in the State but also the other power programmes. Geographical situation of Tripura is such that all materials like steel, cement, conductors, transformers, etc. which have to be brought from down-country, involve considerable transportation over-land. The distance of Calcutta from Tripura is about 1800 KMs. by road. This not only ~~increases~~ the cost but also renders the availability uncertain. In the absence of availability of steel supports the State had tried to use locally available wood poles. Since the State is away from centres of wood treatment, the availability of treated wood poles is also limited. If arrangements are made to locate a treatment plant in Tripura itself, the shortage of supports would be relieved to a great extent. / increases

4.9.3. The length of transmission/distribution networks in the State is not extensive, which can be seen from Annexure VII. The length of sub-transmission lines per village is only 0.1 compared to all-India figure of 1.00. The length of distribution lines per electrified village is 2.3 compared to all-India figure of 5.5. It has also been represented by the State that the length of lines per consumer in rural areas is on the higher side in this State on account of hilly terrain, the scattered nature of villages, etc. It is found that such a situation increases the operation and maintenance cost.

Also, their rural areas are inhabited by high percentage of tribals and scheduled castes, whose economic conditions do not permit them to avail of the amenity of electricity in a big way. The returns on the schemes are, therefore, low.

4.9.4. The shortage of power in the State can, to a great extent, be attributed to the delay in the completion of Gumti Hydel Project, which was to be completed during the IV Plan. The reasons for non-completion of this have been indicated by the State as under :-

- (i) Shortage of essential raw materials, like steel and cement;
- (ii) Changes in the scope of the Project, like construction of dykes, syphon, cross drainage works, etc., which were not included earlier;
- (iii) Non-availability of sufficient labour;
- (iv) Shortage of construction power;
- (v) Mizo raids in the project area in the beginning of the year 1970;
- (vi) Disruption of work due to Indo-Pak war in 1971;
- (vii) Natural calamities like droughts and floods. Particularly, the floods in May, 1973 caused considerable devastation in the project area;
- (viii) Non-availability of cranes due to lock-out in the factory of M/S Tractors (India) Ltd.

4.9.5. Due to slow power development in the State, the organisational set up has also not been strengthened. Presently, there is a Superintending Engineer in-charge of electricity department under the overall charge of Chief Engineer, P.W.D., who looks after the power development in the State. Considerable strengthening of this organisation is necessary if any large-scale rural electrification programme is to be undertaken and it is considered that a separate Chief Engineer for power development is necessary. The State Government is already considering the proposals to re-organise the electricity unit as an independent unit under the Govt. of Tripura which will provide better scope to increase tempo of rural electrification works. It has also been stated by the State authorities that in their scheme for Rural Electrification Corporation financing, they have included funds for the separate organisation to take up the rural electrification programme.

4.9.6. The rural electrification in this State is also confronted by many other problems which have retarded its growth. This State has a very high percentage of villages with less than 500 population (89%). The terrain is hilly and forest-covered. There is heavy rainfall. The tribal and scheduled caste population practise traditional modes of agriculture. On account of these factors the cost of rural electrification schemes is very high, the load growth is small (particularly, the agricultural load growth is negligible). The returns on such schemes are not commensurate with the investment. The State Government has stated that in case of Rural Electrification Corporation schemes in this State, they are not expected to touch a break-even point even at the end of the 15th year (this is in reference to Minimum Needs Programme) and they have suggested that break-even point may be shifted to the 20th year.



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4.10 WEST BENGAL

The reasons for slow progress of rural electrification in West Bengal are as under :-

4.10.1. Less attention paid to power development in general and rural electrification in particular in the State. The development of the installed capacity in this State, although steady, has not been rapid, considering the demand. During the First & Second Plans, installed capacity added was about 231 MW; during the Third Plan, about 314 MW; during the next three Annual Plans, 142 MW and during the Fourth Plan only 124 MW was added. The installed capacity at the end of the Fourth Plan was 1,333 MW. Most of the power development has been for supply to large industries, a number of which are set up in this State and also for Railway traction. The progress in the field of rural electrification had also been slow even upto the first two years of the Fourth Plan. It is from the year 1972 only that any real progress has been made. This would be clear from the investment made on power development and on rural electrification during the various plan periods as indicated below :-

Plan period	Investment on power (Rs. in crores)	Investment on rural electri- fication (Rs. in crores)
First Plan	2.56	1.22
Second Plan	13.57	0.30
Third Plan	77.31	0.60
Three Annual Plans(1966-69)	32.88	2.66
Fourth Plan	111.55	32.05

In the Fourth Plan, the approved Plan outlay was only Rs. 10.0 crores and the anticipated investment Rs. 32.95 crores. This indicates that the State has now realised the importance of making more investment on rural electrification.

4.10.2. Shortage of power in West Bengal is another reason for slow progress. The geographical situation of West Bengal is such that most of the potentially industrial areas, as well as industrially developed areas, lie in South Bengal, where most of power development has taken place. In the districts of North Bengal, except for Jaldhaka Hydel Scheme (installed capacity of 27 MW), and little Rangit Hydel Scheme (2 MW), the only other mode of generation is with the help of diesel engines, which is costly as well as uncertain. In some places power is also received from Bihar State Electricity Board. Even Jaldhaka Hydel Scheme had run into difficulties due to floods in 1968 and was not able to give its full output. It is only recently that the position in respect of this scheme has improved and could be considered satisfactory.

Most of the power generated in South West Bengal has gone to industrial loads which have developed around Calcutta, and some other sub-urban complexes around the major industrial cities like Durgapur. To remedy the situation, the West Bengal State Electricity Board have suggested that the installed capacity may be suitably stepped up early and clearance of projects like Jaldhaka Hydel Project extension may be given and establishing of super Thermal Power Stations etc. may be considered at the earliest. It has been indicated that there are about 60,647 shallow tubewells, 1,945 deep tubewells, 2,022 river lift points in West Bengal. Out of these, 4,582 shallow tubewells, 1,816 deep tubewells and 130 river lift points are energised. The remaining are running with diesel engines. Conversion of these will require substantial power generation capacity. The programme of State Agricultural Department is for the installation of another one lakh shallow tubewells and 2,000 deep tubewells/river lift points during the Fifth Plan, the energisation of which will also require additional power. For a large programme of rural electrification and conversion of diesel-run pumps/tubewells, simultaneous development of the generation capacity is, therefore, essential.

4.10.3. The transmission and distribution network so far laid out, caters to the industrial loads and urban centres mainly. The length of sub-transmission lines per village is only 0.5 compared to 1.0 for the country as a whole. The length of distribution lines per electrified village is only 2.3, compared to the all-India figure of 5.5. The physiographical features of West Bengal have not added any credit to this. The Himalayan and sub-Himalayan regions in the North have very few transmission lines. In lower Bengal, the hilly and tribal districts in West do not have a good transmission and distribution network, except for the transmission lines meant for evacuation of power from the generating stations, or for supplying power to the industrial centres. There is no major transmission line across West Bengal connecting the South with North Bengal. It is only now that a line is proposed to be constructed for supplying power from Farakka to Malda. In Southern Bengal, the deltaic area is covered by creeks and islands. The saline water conditions available also prohibit any development here. The Sunderbans area and the Contai and Tamluk Sub Divisions of Midnapur district come under this category. Due to either absence of load demand, or due to high cost of extending transmission lines, involving river crossings and sea crossings, and the general physiographical bottlenecks in construction of lines in these areas, the rural electrification network of West Bengal has mainly catered for Calcutta and the sub-urban complex around it.

4.10.4. West Bengal has substantial rainfall during the monsoon season. It is subjected to floods almost every year. About 16.1% of the total areas was flood affected in 1971 and 7.7% in 1973. The people follow their traditional modes of agriculture, utilising the monsoon rains for irrigation of their agricultural fields. Also, on account of economic backwardness of rural masses, supplemental irrigation was not being used. Quite a high percentage of population is economically backward, tribal or Harijan. No serious

effort had been made earlier to change the traditional modes of agriculture, so as to create a demand for agricultural irrigation load. The perennial irrigation facilities covered only 33.4% of the cultivated area in West Bengal. In recent years, substantial awareness has been created among the farmers to use modern agricultural methods, with high yielding variety seeds and high fertilizer utilisation requiring intensive irrigation, which has necessitated the use of underground water for irrigation purposes. A large number of shallow/deep tubewells have come up in the State, and quite a sizable number of which are diesel operated. The slow progress in the field of rural electrification has prohibited the large scale energisation of pumpsets so far. However, in the subsequent Plans, it can be expected that with the increasing pace of rural electrification, most of the readily available load of diesel pumpsets would be converted to energised lift irrigation. It was informed by the State authorities that there are about 60,000 shallow wells in the State fitted with diesel pumpsets, but of which the State Government is proposing to electrify 5,000 in the first instance. One of the difficulties which is envisaged in connection with such conversion was about the disposal of diesel pumpsets as there is no agency or prospective buyers to whom these diesel pumpsets could be sold by the farmers.

4.10.5. As discussed in Chapter III earlier, groundwater surveys have been carried out in the State. The status of information indicates that about 2/3rds of the area lying in the State holds promising prospects for groundwater development. But, in some areas the water is not suitable for irrigation and for obtaining good water, deep tubewells are necessary. In such areas the use of pumpsets installed on open wells is restricted and shallow or deep tubewells may have to be used. Deep tubewells involve considerable investment and understandably are beyond the reach of most of the farmers. In some other areas the availability of groundwater is restricted. The results of these geohydrological surveys have to be made available to both the Agricultural Department and State Electricity Board, so that the underground water conditions are known for each area and suitable plans for utilisation of the same can be drawn up. The State Agricultural Department will have to construct the deep tubewells/river lift points in areas, where shallow tubewells are not possible.

4.10.6. Earlier, no suitable organisation was existing in the West Bengal Electricity Board for planning and executing large scale programme of rural electrification. Some time back, the organisational set-up of rural electrification was strengthened both at the Headquarters level and at the field level. The Headquarter office was headed by an Additional Chief Engineer assisted by a Deputy Chief Engineer, Superintending Engineer(Technical) and Superintending Engineer(Procurement) with suitable engineering and other technical work. In addition, a set up under a Deputy Chief Accounts Officer was also provided for this work. There were four rural electrification circles, each under a Superintending Engineer, with the rural electrification field divisions in almost all the districts, for execution of rural electrification works including irrigation programmes. This set-up had existed for more than a

year. However, recently, the position was reviewed by the Board. It was seen that there is considerable time bar in handing over the rural electrification installations to the maintenance wings, which are responsible for operation and maintenance of the villages electrified, and for effecting service connection works. In view of this and other difficulties, certain re-organisation has been made in the above rural electrification set-up. The Headquarters office of the rural electrification wing has now been merged with the T & D set-up and placed under the over all charge of a Chief Engineer(T&D). At Headquarters, a Deputy Chief Engineer is responsible for survey work, preparation of projects and schemes of rural electrification for obtaining loans and finances. The field divisions are common both for rural electrification and T & D. Two Deputy Chief Engineers (Rural and Distribution) look after the Operation & Maintenance works in the divisions and circles, including the execution and progress of rural electrification works; and revenue realisation.

4.10.7. Lack of co-ordination between the various developmental departments, specially — the Agricultural Department had been another bottleneck. The construction of tubewells was not co-ordinated with that of the Transmission & Distribution network, with the result that tubewells were constructed in areas which are remote and not in the immediate vicinity of the existing Transmission and Distribution lines. In such cases, these tubewells are operated with diesel pumpsets. Recently, during the meeting held in West Bengal, it was indicated that the State Agricultural Department has provided about Rs. 7.5 crores for energisation of minor irrigation pumpsets, including river lift points, deep tubewells etc, which are scattered all over the State. In view of the limitations of the funds availability, specially as the Board may get only project-based loans from Rural Electrification Corporation including Minimum Needs Programme, the tubewells located outside such scheme areas, will not be covered and difficulties may arise as the Board may not be able to lay lines in the areas proposed to be covered by the Agricultural Department. Therefore, the programme of conversion of diesel tubewells and that of energisation of new tubewells will have to be coordinated with the development of the installed capacity in the State and the extension of necessary transmission and distribution network. Similar coordination is necessary among other development departments such as Industries Department, Fisheries Department etc. West Bengal is industrially advanced and, comparatively, the number of rural industries is very high here. These have a considerable scope of energisation and making the rural electrification schemes viable. In case of 47 Rural Electrification Corporation Schemes sanctioned till 31.10.1974 for this State for an estimated cost of Rs. 28.38 crores, the number of small industries per village is more than 2.5, which is second highest in the country, being next to Kerala only.

4.10.8. Another difficulty which the State Electricity Board is presently facing is regarding the schemes being executed with the loan assistance of the Rural Electrification Corporation. A number of difficulties have been pointed out as indicated below :-



- (a) The Rural Electrification Corporation now releases only 25% of the sanctioned loan amount as the first instalment. In Rural Electrification works, 30% of the cost of the estimates relate to the materials, timely procurement of which is the basis of success of the programme. The present day shortage of these materials requires that much advance action for procurement must be taken to ensure their supply. With 25% advance, it is very difficult to order sufficient materials and ensure regular supply. The second and subsequent instalments of the loans are released by the Rural Electrification Corporation against assessment of specified physical progress achieved by the Board in respect of construction of works and giving of service connections. However, due to several reasons like shortage of material or funds, either the works are not completed, or due to lack of response on the part of the farmers the number of connections do not come up as envisaged. This puts the Board in a critical situation as they are not able to proceed with further construction works on account of shortage of funds and the funds already invested are tied up fruitlessly. Development of load demand depends on the creation of suitable infra-structure by all the development departments, on which the Board has hardly any control. It has been suggested that full loan amount may be released by the Rural Electrification Corporation as the first instalment.
- (b) The Rural Electrification Corporation require prior approval of all minor deviations from the sanctioned project reports, which involves considerable time-consuming work. It has been suggested that no approval may be necessary for minor deviations and only for major deviations, such approval may be insisted upon.
- (c) The Rural Electrification schemes extend over a period of 4 to 5 years. With the present trends of price increases, the cost of projects goes up in the meanwhile considerably and the Boards cannot complete the works within the sanctioned amount. The additional funds necessary for completing these schemes are not available, with the result that their completion is held up. Sometimes due to the increases in cost of materials, the progress is affected to the extent that second and subsequent instalments are held up. Moreover, with the increase in prices, if the schemes are revised at the revised price levels, the required viability criteria may not be justified.
- (d) It has been stated that for the Fifth Plan, the State Government have not been advancing any funds under State Plan and the only funds available are under

Minimum Needs Programme or loans from the Rural Electrification Corporation. The Minimum Needs Programme loans are meant for specific areas and are project based. Rural Electrification Corporation loans are also project based and require certain viability criteria to be satisfied. All these schemes, therefore, can be prepared only for specific areas and the Board may be left with no funds to take up rural electrification in the rest of the areas; or for taking up extension of works in the areas already electrified.

- (e) The State has been allotted Rs. 27 crores under the Minimum Needs Programme during the Fifth Plan under which some specific areas have to be electrified, so as to bring up the percentage of rural population benefited to 40%. The Minimum Needs Programme areas are essentially backward and no suitable infrastructure exists in these areas. These schemes, therefore, have low load demand and high capital cost. Any scheme of rural electrification in such areas will hardly be viable under any financial standards and will entail loss to the Board. Relaxations to the Minimum Needs Programme loan terms, either in the form of making outright grants, or in some other form, are therefore considered necessary. It was, therefore, suggested that the Board may be allowed to draw the amount of Minimum Needs Programme loan in the beginning



and prepare necessary Rural Electrification Corporation Schemes subsequently at a later date for sanction. It was also suggested that some of the tribal districts, such as Cooh-Behar, which have not presently been covered under the Minimum Needs Programme may be included under this programme.

4.10.9. Most of the generation in North Bengal Districts, namely Darjeeling, Jalpaiguri and Cooh-Behar, is diesel based. The cost of light diesel oil which was about Rs. 313.53 per kilo litre in September, 1971 (with exemption of excise duty) has increased to the present price of Rs. 876.66 plus excise duty @ 13% per kilo litre and the cost of generation now works out to more than 36 paise per unit, (excluding other charges like lubricating oil, cost

CHAPTER - V

INVESTMENTS AND PROVISIONS OF FUNDS  
FOR RURAL ELECTRIFICATION

5.1. As per terms of reference, the Committee are to examine the adequacy of the provisions made by those States in their respective Plans for rural electrification and the additional resources available from the institutional sources. Rural Electrification programme is in the State Sector, the size and content of which is determined by and large, in the light of financial resources of the State, the inter-sectoral priorities, competitive demand of other components of power programmes, viz., generation, transmission and distribution, potential available for lift irrigation and the status obtaining in regard to power availability, extension of transmission/distribution network and availability of basic inputs like steel, cement, conductor and other materials. A statement has been enclosed at Annexure XXIV, which gives the Plan-wise investments on rural electrification, in these States during the various Plan periods. This information was requested in the questionnaire both from the State Governments as well as from State Electricity Boards. However, it was not supplied by many of the States, or the information supplied was not correct/complete. This statement indicates the total Plan investments in all sectors, including the investments made on power and on rural electrification during each Plan period. It will be seen from this Annexure that in case of the States for which the information is available, in the earlier Plan years the investments on rural electrification have been meagre compared to the total investments on power and the investments on power itself have been small compared to the total Plan investments in all sectors. In case of most of the North Eastern States, the information for earlier Plan years is not available as many of these States have been created only in recent years. Earlier, either they were Union Territories or part of the Assam State. In the States of Bihar, Orissa and West Bengal, as would be seen from the above Annexure, the investments on power, as well as on rural electrification, have been small in earlier Plan years, although the position has improved in the recent years, specially during IV Plan.

5.2. After the 3rd Plan, it was realised that many States were lagging behind in the field of rural electrification and a number of steps were taken by the Government of India to improve the situation. One of the steps taken, was to set up a Committee of Members of Parliament in the year 1968, under the Chairmanship of the then Union Deputy Minister for I & P, to review the progress of rural electrification in the 9 backward States of Assam, Bihar, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Orissa, Rajasthan, Uttar Pradesh and West Bengal and to suggest measures for accelerating the pace of rural electrification in these States. The Committee submitted their report in July, 1972, and made several recommendations for increasing the pace of rural electrification in these backward States. Most of the major States of Eastern Region were included in the purview of this Committee. Another step which was taken, was to set up the Rural Electrification Corporation, under the Central Sector, which is a semi-Government Undertaking for financing the rural electrification.

schemes of the State Electricity Boards by providing loans at reasonable terms and conditions, against specific schemes prepared on area concept basis and which satisfy the viability criteria laid down by the Corporation. For the country as a whole, for IV Plan, an outlay of Rs. 294.69 crores was provided for rural electrification under the State Plan outlays and another Rs. 150 crores as outlay of the Rural Electrification Corporation, which was subsequently increased to Rs. 171 crores. In addition, the State Electricity Boards were expected to raise funds from financial institutions like Scheduled Banks, Agricultural Finance Corporation, Agricultural Re-finance Corporation, Life Insurance Corporation etc., to the tune of Rs. 75 crores. Thus, the total outlay for the IV Plan was of the order of Rs. 540 crores. Against this, the actual investment has been of the order of Rs. 818 crores. Statement at Annexure XXV gives the IV Plan outlay on rural electrification in respect of the Eastern States and the resource-wise break-up of the actual investment made during this period, as intimated by the States. From this statement, it would be seen that the States of Assam and Bihar incurred less expenditure under the State Plan than provided in the IV Plan document. The States of Bihar, Orissa and West Bengal were able to obtain loan assistance from Rural Electrification Corporation and make substantial investments. These States were also able to obtain loans from financing institutions. In case of Bihar, however, the total investment during IV Plan from all sources is less than even the outlay under the State Plan only. As already pointed out in para 4.3.6., the reason for this is, that the Bihar State Govt. have not made available necessary funds under the State Plan to the Board for rural electrification. In case of Orissa and West Bengal, however, the investments on rural electrification have been pretty good. In these two States also the investments under State Plans have exceeded the outlays. This is the reason of the sudden spurt in the progress of rural electrification in these two States during the IV Plan period, particularly, in the last 2-3 years. Assam has made only a small investment under R.E.C. financing. Their investment on rural electrification during the Fourth Plan, however, is not available. In Meghalaya also, some investment was made under R.E.C. financing by the Assam State Electricity during the IV Plan. The remaining States were neither able to obtain funds from Rural Electrification Corporation, nor from the financing institutions for their rural electrification programmes. This is because the R.E.C. advances loans to the State Electricity Boards only and these States have not established such Boards and for obtaining loans from the Financing Institutions the State Governments should stand guarantee for which they are reluctant, mainly due to their stringent financial position. However, in respect of Manipur, Nagaland and Tripura, the investments under State Plan have exceeded the outlay, which may be because the Plan outlays for these States were very small.

5.3. Presently, we are already in the 1st year of the V Plan and the final shape of the Plan is not yet known. Due to various reasons, the Plan is still under the consideration of the Govt. of India. However, from the Draft of V Plan, it is seen that

total outlay under the Public Sector for the V Plan is Rs. 17,250 crores, in which power has got only 16.25% share, i.e. an outlay of Rs. 6,190 crores only. Out of this, an outlay of Rs. 1,098.24 crores is proposed for rural electrification during V Plan as under :-

	(Rs. in crores)			
	M.N.P.	Normal State Programme	R.E.C.	Total
States	271.03	408.52	400.00	1,079.55
Union Territories	1.30	17.39	-	18.69
Total	272.33	425.91	400.00	1,098.24

The programmes under the Minimum Needs and Rural Electrification Corporation are under the Central Sector and these investments would be made available to the States through the Rural Electrification Corporation. The State-wise break-up of these investments has not been indicated in the Draft of V Plan.

5.4. One special feature of the V Plan programme is the introduction of the National Programme of Minimum Needs (MNP) which includes Elementary Education, Rural Health, Nutrition, Rural Water Supply, Rural Roads, House Sites for Landless Labour in Rural Areas, Environmental Improvement in Slum Areas, and Rural Electrification. Under rural electrification, this programme envisages making electricity available mainly in the backward regions of certain States only to provide the infrastructure for development. Other rural development programmes such as energisation of irrigation pumpsets, providing drinking water facilities, construction of roads, establishment of health centres, etc. are also contemplated under the Minimum Needs Programme for development of backward regions and the States would have to prepare integrated programmes under the Minimum Needs Programme. The programme provides for power supply in the rural areas to growth centres such as Education Centres, Health Centres, Marketing Centres and connections for irrigation pumpsets. To cover Minimum Needs Programme, rural electrification programme by and large will be confined to such States where overall level of rural electrification attained in terms of rural population benefited was low by the end of IV Plan. This programme has been drawn up with a view to ensuring that by the end of V Plan, at least 30-40% of the rural population receives electricity benefits. If the States can find additional resources, this programme could be augmented. The Planning Commission, in consultation with the States, have already given broadly the indication about areas proposed to be electrified under this Programme. Statement at Annexure XXVI indicates the Minimum Needs Programme outlay and physical programme for rural electrification approved for V Plan in respect of the Eastern States. It will be seen that out of the total outlay of Rs. 272.33 crores for rural electrification under the Minimum Needs Programme for the country as a whole, Eastern States would get Rs. 129.92 crores. Except for Arunachal Pradesh, rest of the 9 States are included in this programme. This programme was finalised in

consultation with the representatives of the concerned States and outlays approved. However, the allocations in the Annual Plans of the States, under this programme, would depend upon the resources available and the priority assigned by the States within the overall Plan. It has already been decided that the funds under this programme will be routed through the Rural Electrification Corporation, which has already formulated and circulated the viability criteria for the schemes to be sanctioned under this programme and the terms and conditions of the loans, which are given in Annexure XXVII. The modus-operandi for advancing the Minimum Needs Programme loans to Union Territories (Mizoram in this case) have, however, not been finalised and is still under consideration of the Government of India. This should be finalised quickly to enable these Union Territories to avail of the Minimum Needs Programme loan for rural electrification.

5.5. In regard to the provision of Rs.400 crores made under R.E.C. financing programme, it may be noted that the quantum of loan assistance to be obtained by the individual States from the Corporation would depend largely on the ability of the States to prepare and submit schemes for sanction according to the viability criteria of the Rural Electrification Corporation and also on the ability of the States to execute such programmes quickly. It may be relevant in this connection to point out that during the IV Plan the Rural Electrification Corporation sanctioned a total of 618 schemes for a sanctioned loan amount of Rs.300.38 crores and during the period they disbursed a total loan of Rs. 161.87 crores to the States for their rural electrification programmes under the outlay of the Rural Electrification Corporation. Out of this, the share of these 10 Eastern States was the sanction of 138 schemes for a sanctioned loan amount of Rs. 75.40 crores and disbursement of Rs. 34.25 crores only. This underlines the basic incapability of these Eastern States to either prepare suitable schemes or to get the satisfying the viability criteria of the Corporation, ~~xxxxxxxxxxxx~~ necessary disbursements for their sanctioned schemes released from the Corporation. This, coupled with the fact that only a few Eastern States are entitled to get the R.E.C. loans, is responsible for the slow progress, which has been discussed in some detail earlier in Chapter IV.

5.6. In the Draft V Plan, the State-wise break-up is neither given for the outlay of Rs.400 crores to be provided through Rural Electrification Corporation, nor for the outlay of Rs.425.91 crores under the Normal Development Programme of the States. However, the Draft Plan indicates the State-wise break-up of the targets to be achieved under the Normal Development Programme of the States and the Minimum Needs Programme. For the country as a whole, it has been indicated that 69,100 villages will be electrified and 8,14,800 irrigation pumpsets will be energised under these two programmes. The corresponding figures for the Eastern States being the electrification of 26,488 villages and 1,28,400 irrigation pumpsets under these two programmes. The State-wise break-up of these for the 10 Eastern States is given in Annexure XXVIII. Under the Rural Electrification Corporation outlay only, the Draft Plan proposes the electrification of 41,108 villages.

7,63,200 irrigation pumpsets during the V Plan in the country. Thus, the Draft Plan envisages the electrification of a total of about 1.1 lakh villages and 15.78 lakh irrigation pumpsets in the country during the V Plan. The corresponding figures for these 10 Eastern States are not available, as the break-up of Rural Electrification Corporation Programme has not been indicated.

5.7. As already stated, we are in the 1st year of the V Plan. The Annual Plan 1974-75 was finalised by the Planning Commission in consultation with the different States. The content of rural electrification in the Plan programmes for the year 1974-75 has been finalised and Statement at Annexure XXIX indicates the outlay on rural electrification for the year 1974-75 for the Eastern States, under the various sources of financing, viz., the Minimum Needs Programmes, Normal Development Programme and Rural Electrification Corporation. Briefly, the position is as under :-

	Total for India (Rs. in Crores)	Total for Eastern States (Rs. in Crores)
Minimum Needs Programme	21.53	12.43
Normal Development Programme	15.67	3.61
Rural Electrification Corporation	52.00	13.90
Total	89.20	29.94

The progress of sanctioning of M.N.P. schemes by the Rural Electrification Corporation has been indicated in Annexure XIII, from which it would be seen that only 2 schemes of Bihar, 4 schemes of Orissa and 3 schemes of West Bengal were sanctioned till 31.10.1974 under the Minimum Needs Programme.

5.8. The States were separately asked to intimate their total targets for the year 1974-75. Annexure XXX indicates the targets of electrification of villages and pumpsets during the year 1974-75 (as intimated by the States) and also their achievements from 1.4.1974 to 30.9.1974 i.e. the first six months. From this Statement, it will be seen that, even if the main working season is the remaining six months, the achievement for the year for the electrification of villages is going to fall short considerably except in case of Orissa and West Bengal. The target of energisation of pumpsets is likely to fall short in respect of all the Eastern States.

5.9. In the earlier chapters, it was stated that the shortage of materials is invariably one of the reasons for slow progress of rural electrification. This shortage has also affected the other wings of the power programme, viz., generation, transmission/distribution. Realising this fact, the Government

of India had taken some steps to assess the requirement of various important line materials required and make arrangements, so that they are available in equitable quantity in all the States. Already, a much higher priority, next only to defence, is proposed to be accorded to power, in respect of materials. In respect of these Eastern States, the requirements of Aluminium, Steel and Cement, for the V Plan as a whole and for the year 1974-75, as intimated by the respective States are indicated in Annexure XXXI and XXXII respectively.

5.10. From the above paragraphs, it is evident that the provisions made by these States in their respective Plans for rural electrification during the earlier Plan years were not adequate and were in fact, very much wanting. As already discussed, even the creation of Rural Electrification Corporation, which was supposed to provide supplemental loan finances to the States to increase the pace of their rural electrification programme, has not had any impact as far as these Eastern States are concerned. Of a total disbursement of Rs.161,87 crores for the country during the IV Plan, the Corporation disbursed only Rs. 34.25 crores to these States. The actual investment, however, was only Rs. 27.76 crores, compared to Rs.138.65 crores in the country as a whole, from the Corporation sources. From institutional sources also, these States could invest only Rs. ~~14.01~~ <sup>24.01</sup> crores on rural electrification against a total of Rs. ~~206.57~~ <sup>206.57</sup> crores for the country. These sources of finances were available to only few of these Eastern States, namely Assam; Bihar, Orissa and West Bengal. The adequacy of the provisions for rural electrification for the V Plan is difficult to be examined by the Committee at this stage when the total content of the V Plan is still under the consideration of the Government. Also, considering the past performance of obtaining the finances from institutional sources, the Committee have their own doubts about the capacity of these States to obtain such loans from financing institutions or in some cases even from the Rural Electrification Corporation. As discussed earlier, even the utilisation of the loans under the Minimum Needs Programme which are earmarked, is doubtful with the viability criteria as prescribed by the Rural Electrification Corporation. In the opinion of the Committee, while finalising the total content of V Plan and revising it to suit the resources position, there is a case for allocating more funds for rural electrification to these Eastern States and for reconsidering the relative provisions under different sources of financing.

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## CHAPTER VI - RECOMMENDATIONS

6.1. The ten States/Union Territories in the Eastern Region, namely, Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Tripura and West Bengal, are very backward, particularly in the matter of rural electrification. The Committee after examining the reasons very carefully recommend certain measures for the general development and for rural electrification in particular in these States. These recommendations are generally applicable to all the ten States. Wherever a recommendation is meant for a particular State or States, this has been specifically indicated.

6.2. It is seen that in these States the progress in all the developmental sectors has been very poor. It is, therefore, recommended that an intensive effort should be made in all the developmental sectors, especially in the field of agriculture, industries, irrigation, roads, etc., so as to provide necessary infra-structure for power development. This has a particular reference to the tribal areas of Bihar, Orissa, West Bengal and North Eastern States. Most of these areas are hilly and they have also special problems. In the North-eastern States, the North Eastern Council is already functioning as the co-ordinating body in this respect. It is, therefore, recommended that a similar agency, either at the State or at the Central level may be created for co-ordinated development of the tribal areas of Bihar, Orissa and West Bengal and also of Madhya Pradesh, as these are geographically contiguous areas. At present, the tribal development of these areas is done by the individual States and there is hardly any co-ordination. The co-ordinated development in all sectors will result in speedy power development and accelerate the pace of rural electrification.

6.3. The absence of adequate power availability has been one of the important reasons for slow progress of rural electrification in these States. The Committee have gone into this aspect as well and would recommend the following measures to improve the power position as speedily as possible :-

6.3.1. The Committee have noted that the actual generation capacities in certain States are much below the installed capacities. Urgent steps must be taken by the State Governments/Electricity Boards to utilise the full plant capacities to the extent possible with a view to improving the power supply.

6.3.2. The work on the power houses under construction must be expedited and all the bottlenecks which are delaying their commissioning should be removed. There are a number of problems which must be looked into by the concerned State Governments/Central Ministries and sorted out. The work particularly on Gumti and Loktak Projects in the North-eastern Region, Barauni Extension and Tenughat in Bihar, and other power projects should be expedited.

- 6.3.3. There is considerable thermal potential in the Eastern States in the coal-fields in Bihar, Orissa and West Bengal. There are proposals of setting up super thermal power stations at coal pit-heads and transmitting the power to the load centres in different States. The work of investigation and planning of such super thermal power stations is to be expedited in view of the acute power shortage existing in these States. There is some thermal potential available in Meghalaya also, but the coal available has a high sulphur content. Suitable technical improvements need to be considered for utilising this potential.
- 6.3.4. The development of power in the North Eastern Region should be a co-ordinated one, as this region (though constituting several States) forms a contiguous geographical area. The hydel power potential of the rivers in the area, including that of the Brahmaputra, is immense and long range power development, as well as the short-term measures have to be undertaken. The Committee recommend that special efforts should be made to investigate the complete hydro potential of this area, for its phased exploitation later on.
- 6.3.5. For North-Eastern and other hilly regions, the Committee feel that intensive efforts should be made for setting up micro-hydel units. The potential for setting up such units is immense in all the States of North-eastern region and particularly in the States of Arunachal Pradesh and Mizoram. The experience of the States of Uttar Pradesh and Himachal Pradesh in setting up such units could be taken benefit of. The availability of the micro-hydel units in the country is at present limited to only one manufacturer. Efforts should be made to make available adequate quantities of generating sets to meet the requirements at reasonable prices. One major benefit of setting up such micro-hydel units is that loads can be developed in remote areas without extending the transmission/distribution networks over difficult terrains. The transmission system can be developed later on for connection with the States/regional grids, when sufficient load has developed. Diesel sets should be installed only in places where setting up of micro-hydel schemes and/or extending the grid network is not possible. The cost of diesel generation is very high and its availability is also limited and, therefore, diesel generation may be resorted to judiciously. The Committee also suggest that considering the socio-economic aspect of such development and the amount of financial loss the Electricity Boards have to incur on account of diesel generation, the excise duty on diesel oil used for power generation may be waived off for these States.

- 6.3.6. Every effort should be made to complete and commission the sanctioned transmission/distribution network. Many transmission lines, including inter-State lines, are delayed for various reasons including shortage of materials, right of way, inter-State problems etc. Efforts should be made to remove these bottlenecks expeditiously. Concerned Ministries of the Central/ State Governments should provide all the necessary assistance, wherever required, for this purpose. Particularly, the requirement of steel, cement and aluminium has to be met on a priority basis. In addition to completing expeditiously the lines under construction, the transmission system of each State must be planned in detail for long range power development. For North-eastern region the transmission system should be for the region as a whole and the agency for construction of transmission lines in this region may be decided by mutual agreement among the States. Proper sub-transmission system up to 33 KV also has to be extended considerably, specially in North Bihar, North Bengal and Orissa. 11 KV lines and LT lines should be extended depending upon the requirement of loads in different rural areas.
- 6.4. As discussed earlier, the main reason for slow progress has been the absence of any basic infra-structure which is conducive to power development. Therefore, intensive load promotional activities have to be undertaken to ensure speedy progress in rural electrification. A few suggestions in this regard are given below :-
- 6.4.1. Most of the Eastern States have heavy rainfall and are often subjected to floods. This results in considerable crop damage. The populace is practising the traditional mode of agriculture. A change in the agricultural pattern is considered necessary, which will not only increase the yield but also save the crops from being subjected to floods. Use of high yielding varieties of food-grains, together with intensive fertiliser use, would necessitate intensive irrigation, which will develop the demand for lift irrigation both from underground sources or from surface rivers. In tribal areas, where the tribals practise shifting agriculture, and are migratory, efforts should be made to provide them with fixed habitats and to encourage them to practise cultivation at fixed places. All necessary facilities to them must be provided by the State Governments.
- 6.4.2. The industrial development is very slow. Local industries must be encouraged. These States contain huge forest areas and there is considerable scope for establishing forest-based industries, such as paper, plywood, commercial timber, saw mills etc.

- 6.4.3. In hilly areas there is considerable scope for developing orchards, fruit canning industries, cultivation of potatoes, ginger etc. and development of poultry and piggery. Development of tourism also is an attractive proposition in the beautiful, richly vegetated and scenic hilly areas of North eastern Region. There is sizeable scope for development of pisciculture and fish preservation.
- 6.4.4. Most of the rural areas have some cottage industries. Development of these cottage industries in a systematic way and making them power-operated, wherever feasible, will go a long way in creating rural load demand.
- 6.4.5. There is some mineral potential in the North-Eastern States. Such potential is considerable in other States, particularly in the Western Region of West Bengal, Orissa and Southern Bihar. This mineral potential needs to be tapped, which is expected to usher in a larger number of basic industries. No doubt, considerable investment would be necessary for this purpose and the concerned Ministries of the State/ Central Government will have to prepare long-range programmes for the same. Development of these industries will considerably improve the material shortage for power development and rural electrification.
- 6.4.6. In the coastal areas, where potential for industrial/ agricultural development is lacking, efforts should be made to revive and streamline the fishing industry, fish canning, etc. There is scope for developing tourist resorts on the coastal areas as well.
- 6.4.7. There is a scope for setting up industries like wood treatment plant, making of RCC/PCC poles, agro-industrial centres for maintenance and repairs of agricultural implements, irrigation pumpsets, motors etc. Setting up of agro-industrial centres in areas of agricultural activity will increase the power demand of rural electrification. These centres should also keep stocks of spares for the various types of implements to effect quick replacement. The Committee suggest that such agro-industrial centres may be set up in each block in such areas where agricultural activity is intensive. However, this matter should be studied in greater detail and a Committee may, if considered necessary, be set up to look into the whole gamut of rural industrial development and load promotional programme and to make suitable recommendations.
- 6.4.8. A Committee was set up by the Government of India in September, 1972, to examine the complaints of rural electricity consumers and suggest remedial measures.

The Committee submitted its report in December, 1973. This report has since been circulated to the various State Electricity Boards. Several recommendations of the Committee, if given effect to, will create the proper atmosphere for an accelerated programme of rural electrification and will be load promotional. The Committee recommend that the recommendations made by the above Committee should be adopted by the Boards without delay.

6.5. Shortage of essential materials has been a retarding factor in power development, the materials being mainly steel, cement, zinc etc. In rural electrification, shortage of supports has been a problem from time to time. Efforts have been made successfully to substitute steel supports by RCC/PCC supports in many areas of the country. Shortage of steel and cement has hampered the even flow of supports for works. In recent years, shortage of aluminium has created difficulties. This shortage has been particularly acute during the current year. Now that very high priority has been accorded to Power Sector (being next only to Defence), it is expected that such difficulties may be somewhat removed in the near future. The Committee, however, suggest that advance planning for materials should be done by the States, based on both long-range and short-term requirements, and advance action for procuring materials, together with coordination of transport arrangements etc. should be taken well in time. The Committee suggest that use of wood poles may be made to the extent of their availability, specially in hill areas, as most of these States have considerable forest wealth.

6.5.1. The adoption of jointed wood poles as recommended by in the Indian Standard Specification is suggested, as even shorter lengths of timber can be made use of. This is a great facility in hilly areas, where transport is a major factor. Timber treatment plants should be set up in the States, where they are not adequate and necessary provision for setting up such plants should be made. Untreated wood poles will not last long in the climatic conditions of the North-eastern States.

6.5.2. In the plains districts, where availability of wood poles is limited, extensive use of RCC/PCC poles should be made. More casting sites for RCC poles and factories for manufacture of PCC poles should be set up in these States to cater to their requirements. The State Governments/Boards should provide necessary funds for this purpose. The Rural Electrification Corporation, from within the relevant Indian Standards, and after consultation with Indian Standards Institution, Central Electricity Authority and many State Electricity Boards, have rationalised the specifications for various materials for rural electrification and have also evolved standards covering rural electrification construction works. These rationalised specifications and construction standards should be adopted to economise on capital investment in rural electrification.

6.5.3. Non-availability of suitable communication facilities have also resulted in delays/shortage of materials at construction sites and affected the rural electrification programme. The setting up of more local industries for the manufacture of local electrification materials will afford relief, in addition to providing scope for industrial development in the region.

6.5.4. The Committee would like to point out that there is scope for improvement in the procedure for obtaining steel, cement, aluminium, zinc and other scarce materials. The difficulties pointed out by different States have been mentioned in Chapter IV. These procedures have to be looked into and improved upon by the concerned Ministries.

6.6. Whereas in some States, geo-hydrological surveys have been carried out and in some others they are under way, in several other States no such surveys have been carried out. The Committee suggest that top priority should be given to complete these surveys, so that the extent of groundwater availability is known and necessary plans for exploitation of the same could be drawn up. All this data has to be made available quickly to the Electricity Boards, Agriculture Departments, Minor Irrigation Departments and other concerned Departments. The data should also be available to the farmers, which can be achieved through the extension services of the Government and through the mass media and field publicity Units. This is very essential to guard against the farmers investing huge capital on digging wells, which go dry. Groundwater Directorates should be set up in the States where they are not functioning. Some States are preparing schemes for energisation of pumpsets for financing by World Bank. Before these schemes are prepared, the results of geohydrological surveys should be made available. These States alone may not be in a position to finance such surveys themselves and part of the funds may have to be given by the Centre in the form of matching grants. While making provision for this in the Central as well as State outlays, the necessity of expeditious completion of these will have to be kept in mind. In addition to the exploitation of the underground water by power operated pumpsets, there is considerable scope for lifting of water from rivers, particularly in Assam and Orissa. The Committee suggest that this aspect should also be given priority.

6.7. In many remote areas, where the transmission/distribution network has not yet been extended, the farmers have installed pumps with diesel engines to utilise the groundwater. West Bengal and Bihar have a very large number of such pumpsets. In West Bengal, a programme has already been drawn up for converting these pumpsets to power operation slowly and other States should also follow suit. The problem of financing the farmers for purchase of electric pumpsets and the sale of diesel engines has to be solved. The Committee suggest that the State Governments may set up an agency which can purchase the diesel engines at depreciated cost from the farmers and

also give them loans at reasonable interest for purchase of power operated pumpset equipment. The diesel engines so purchased, may be offered for sale to farmers in areas where transmission/distribution lines have not been extended, but which hold promise of good underground water exploitation.

6.8. A number of complaints from the consumers were received by the Committee Members at the time of their visits to different States about the procedures, the terms and conditions, the tariffs and the quality of service in rural areas. These should be looked into by the concerned State Governments/State Electricity Boards and the availability of electricity in rural areas should be made conducive towards its use for irrigation, which only will lead to economic development of rural areas and also result in self-sufficiency in foodgrain production. Follow-up action on the recommendations of the Committee referred to earlier in para 6.4.8. above will go a long way in ameliorating the conditions of the rural consumers.

6.9. Organisational inadequacy has been another reason of slow progress in many of these States. The Committee recommend the following measures :-

6.9.1. Rural Electrification Wings of the State Governments/State Electricity Boards should be made separate under the charge of a senior officer, who in case of at least the major States, should be a Chief Electrical Engineer.

6.9.2. Most of these North Eastern States are very young and do not have trained personnel. Due to difficult terrain and remote areas, as also on account of disturbed conditions in some places, the staff is reluctant to be posted there. Training facilities should be provided, if necessary, in other developed States, for training the personnel in design, planning, construction and maintenance of the works. If necessary, help from the Central Organisations like Central Electricity Authority, Rural Electrification Corporation, Water & Power Development Consultancy Services etc. may be taken for investigation, preparation of schemes and their construction. The staff of these Central Organisations can even be deputed to these areas, so that suitable technical organisation is established in the concerned States. Suitable facilities, including monetary compensation, should be provided to the staff posted in areas of difficult terrain or disturbed areas and in remote/interior places.

6.9.3. There should be decentralisation of the authority. This has special reference to the sanctioning of the schemes and giving of administrative and technical sanctions. A number of States had complained that quick clearance of their projects by the concerned organisations is not given, which results in delay. Sanction need not be taken from the Central Organisations, like Central Electricity Authority, Planning Commission etc. in all cases. Where the State Organisations are

competent, the works should not be held up for such technicalities. The Planning Commission have already laid down that for Rural Electrification schemes costing up to Rs.1 crore, these need not be put up to the Technical Advisory Committee and the State Governments themselves can sanction the schemes. Extension of this directive to the Union Territories of this Region would be helpful in reducing the time delay on this account. This financial limit may also be made applicable to micro-hydel and other small generation schemes.

6.9.4. At present there are a number of organisations at the Central level which are looking after rural electrification such as Planning Commission, Central Electricity Authority, Rural Electrification Corporation, Ministry of Agriculture & Irrigation (Minor Irrigation), Small Scale Industries, Organisations looking after tribal development/harijan welfare, Small Farmers Development Agency, Marginal Farmers Development Agency, and many other financing institutions. At State level also, though the execution is done by the State Electricity Boards/Departments, several other organisations like Agriculture Department, Industries Department etc. are involved. The Committee consider that proliferation of the organisations is not conducive to efficiency. It is considered that there should be one coordinating authority at the Central level for development of rural electrification which should supervise and generally over-see this work for all the States, co-ordinate with the other concerned Central Ministries/Organisations, make available the Central Sector funds, monitor the execution of the schemes and obtain necessary statistical information. A co-ordinating agency at State level is also suggested, which can effectively co-ordinate the work of the State Electricity Board/Department in the field of rural electrification with the other Departments/Agencies, particularly Irrigation Department, Industries Department, Social Welfare Department, Tribal Welfare Agencies etc. In the State Electricity Boards/Depts., the wing responsible for rural electrification may preferably be separate and may exclusively look after the work of effective co-ordination.

6.10. There are considerable regional imbalances in these States, specially in Bihar, and West Bengal. These have resulted on account of concentration of the developmental efforts in a few promising districts, some areas being continuously ignored for various reasons and/or being periodically subject to natural calamities like floods, cyclones, etc., areas of tribal concentration and areas having geographical debilities or having absence of any developmental potential. It is the responsibility of the State Governments to ensure a co-ordinated and rational development of all the areas within the State and concerted efforts are considered necessary for areas suffering from natural calamities like floods, cyclones, etc. by way of assistance in case of disasters, early warning for floods, cyclones and taking preventive measures. The Central Government may, on its part, direct more central sector funds to be invested into such regions. The State Governments should also consider the socio-economic aspects of developmental activities, instead of

Contd.....81.



only the economic returns on the schemes and provide subsidies for taking up developmental works in backward areas. The loss sustained by different developmental organisations should be subsidised. The Government of India, by laying down the National Programme of Minimum Needs as a prime objective of the Fifth Plan, have taken a right step, towards providing basic facilities to such specially retarded regions, including tribal regions, and the aim of the State Governments should be to achieve physical targets laid down under this programme. For sizeable impact of rural electrification under M.N.P., the Committee recommend that the tactics should be to concentrate the efforts in a large number of small schemes built around potentially good focal points of development, such as public health centres, growth centres, marketing centres and the like. Such a programme will be economical and will bring in quick results.

6.11. The main reason which is responsible for the slow progress of not only rural electrification, but of all the developmental activities, is the shortage of funds. The sources of financing the rural electrification programme as earlier discussed in Chapter V, are the Normal Plan Outlays of the States, the Central Sector loan financing through the Rural Electrification Corporation, the earmarked funds under the Minimum Needs Programme, and the market borrowings from various financial institutions like Scheduled Banks, Agricultural Finance Corporation, Agricultural Refinance Corporation, Life Insurance Corporation etc. However, due to general financial stringency, the purse strings are tight in all these sectors. Market borrowings from Banks and other financial institutions carry high rates of interest and are not suitable for rural electrification schemes, particularly in backward States. There are a number of difficulties in case of Rural Electrification Corporation financing also, specially in regard to these Eastern States. On all these aspects, the Committee recommend as under :-

6.1.1. The Committee have noted that there is a reluctance on the part of the Electricity Boards to extend the electrification programme to rural areas, as it is generally not remunerative. In some cases State Governments do not pass on the funds in full to the Boards/Electricity Departments, or the outflow of funds is not adequate or continuous. To make it obligatory that the funds provided for rural electrification are spent for the purpose, the Committee are of the view that the funds for rural electrification under State Plan outlays or Normal Development Programmes should be earmarked. Suitable criteria for this may be worked out, so that the funds for rural electrification as approved by the Planning Commission, after the Plan discussions, are earmarked and are released by the State Governments to the Electricity Boards/Departments in full and with ~~utmost expediency~~.

6.11.2. Whereas, during the Fourth Plan, the loan financing through Rural Electrification Corporation formed less than 20% of the total investment on rural electrification, during the Fifth Plan (as per the Draft Fifth Plan) the investment through Rural Electrification Corporation (including Minimum Needs Programme) may be more than 60%. It is noticed that the criteria fixed by the Rural Electrification Corporation for all categories of loans, including Minimum Needs Programme appear to be difficult to achieve by these very backward States. Minor relaxations in the terms and conditions and viability criteria may not give substantial relief. Moreover, the Boards will continue to incur recurring losses on account of Operation & Maintenance of such schemes. The progress of development of load and giving of service connections is very slow in these States, which restricts the continued outflow of Corporation funds. In view of the above, the Committee recommend that the routing of Central Sector funds for rural electrification should be made less through Rural Electrification Corporation and more through State Governments which can absorb the losses and also ensure continued outflow of funds by making them earmarked. One problem with R.E.C. is that, so far, they have been advancing loans to the State Electricity Boards and the States where there are no Electricity Boards had been at a disadvantage. As already mentioned earlier, the States of Arunachal Pradesh, Manipur, Mizoram, Nagaland and Tripura have not received any funds from the R.E.C. However, the Corporation have recently changed this policy and have since taken a decision to consider suitable proposals of R.E.C. schemes coming also from such State Governments where there are no Electricity Boards, for financial assistance. In case of Union Territories it is understood that the Corporation have been advised that these Territories are not allowed to take loans from the financial institutions, including public undertakings. The Committee, therefore, recommend that an early decision may be taken by the Government in this regard so that Union Territories are in a position to avail of the loan facilities from the R.E.C. whether under their Normal Programme or under Minimum Needs Programme.

6.11.3. Absence of continued outflow of funds is as much a retarding factor as the stringency of financial resources. The State Governments, many times, do not release the funds when needed and this results in difficulties for the Boards. Similarly, the subsequent instalments by the R.E.C. are not released, which hampers the progress of works, as also renders the expenditure, already incurred, infructuous. Continued outflow of funds must be ensured by the financing organisations.

6.11.4. There is a case for relaxation of the viability criteria set for rural electrification in these States as schemes are generally not able to satisfy the same. In fact, in the States of North Eastern Region, specially in hilly and tribal areas, the schemes cannot pay even the interest charges.

Out-right grants have to be given on merits by the State Governments or by Central Government for this purpose. The M.N.P. areas are specially backward and although the terms for loans under this programme are considerably relaxed, requiring a break-even in the 15th year, the rural electrification schemes in many of these areas may not be able to achieve the break-even stage even in the 20th year. There is a case for giving the entire M.N.P. loan as out-right grant in such areas or putting moratorium on the interest charges till a break-even is achieved or subsidising the annual financial loss of the Boards. It is certainly beyond doubt that Electricity Boards, specially in backward States, are losing because of handling the rural electrification programmes. In the opinion of the Committee, rural electrification programme is not a development programme of Electricity Boards/Electricity Departments alone. There are several indirect benefits which accrue as a result of electrification in rural areas and which contribute towards uplift of the general economic situation in rural areas. Mainly this results in increase in the food production and industrial development and to that extent can be considered as promotional and developmental activity of those programmes. The Committee suggest that 50% cost of energisation of pumpsets in case of the Eastern States should be given as subsidy by the concerned agricultural departments of the States to the State Electricity Boards/Departments, so that the latter can continue to take larger programmes without having any financial repercussions in their working. Similar subsidy in case of village electrification may also be provided by beneficiary departments. In Orissa, the State Government have subsidised the losses of the Electricity Board, incurred due to handling the rural electrification programme, for two years, which is commendable and other States may also follow this example.

6.12. There are a number of other difficulties in case of R.E.C. loans, which have been discussed in detail in para 4.10.8. The Committee suggest as under :-

6.12.1. The loan amounts to be routed through the Corporation should be quantified in advance at the time of finalising the Annual Plan discussions for different States as was done for the year 1974-75, so that the States know the amount they are likely to get through the Corporation and they can prepare necessary schemes accordingly.

6.12.2. Funds for procuring materials, so as to ensure their timely availability for the rural electrification programme during a year, should be made available to the executing agencies at the beginning of each financial year. This is possible as the quantum of Annual Plan both in financial and physical terms is normally known in January/February of the previous year after the discussions with the Planning Commission are over and the States can assess their requirement of important materials required for this programme and make

necessary arrangements. The Rural Electrification Corporation have recently introduced a new category of loan for advance purchase of materials, under which the State Electricity Boards would be granted advance loans at the beginning of the year for the purchase of materials in respect of all schemes that are targetted to be sanctioned during the financial year. The exact procedure to be adopted for this purpose may be studied in greater detail after response of the State Electricity Boards to the above scheme introduced by the R.E.C. is known.

- 6.12.3 The criteria of physical progress and service connections to be achieved should be relaxed further so that the second and subsequent instalments are available to the Boards, as per an agreed schedule.
- 6.12.4 Wherever there are minor deviations from the sanctioned projects, no prior approval of the Corporation should be necessary. Such prior approval may be insisted upon only in case of major deviations. All minor deviations could be brought to the notice of the Corporation from time to time and approval for the same could be obtained on completion of the project.
- 6.12.5 The Corporation should provide additional loans against the projects to meet the increased cost of such projects as a result of the increase in the cost of materials and labour, as the Boards are not able to obtain finances for meeting such increases in the original estimated costs which are on account of reasons beyond their control. The schemes cannot be completed unless such funds are available. Also in such cases many times when the schemes are revised at the revised price levels, the required viability criteria of the schemes may not be available, in which case the viability criteria may have to be relaxed by the Corporation. Recently the Corporation have examined this problem and with a view to enabling the State Electricity Boards to continue to formulate R.E.C. schemes of optimum size, have decided to enhance the overall ceiling of the cost of individual schemes from Rs. 60 lakhs stipulated earlier to Rs. 80 lakhs. The Corporation have also agreed to admit prospective increases in tariff rates at reasonable intervals while calculating the anticipated revenue. They have further agreed to restrict the scope of work in case of projects already sanctioned, to counter the effect of the cost escalation. Whereas, the above relaxations may enable the State Electricity Boards to prepare and get R.E.C. schemes sanctioned, in case of price escalation during the pendency of the schemes, these steps will not help, as reducing the scope of the schemes may not be desirable in view of its many repercussions. The position needs a review.
- 6.12.6 As per the Draft Fifth Plan, in case of most of these States, either there are no provisions for rural electrification under Normal Development Programme of the States or these

provisions are very small, compared to the provisions under the M.N.P. and R.E.C. financing. This leaves little or no working capital with these Boards for (i) energising irrigation pumpsets, etc. in the areas outside the specific scheme areas; (ii) taking up extension works or giving additional service connections in areas already electrified. The latter is a major draw-back, as the Boards are not able to increase the services in the electrified areas, which would provide them additional returns with small investments. Also consolidation of the distribution networks in such areas to improve the supply conditions or the quality of services is not possible. As suggested above, if more funds are routed through the State Governments, this difficulty is likely to get reduced.

6.13. Most of the Boards have represented that they are incurring losses on account of rural electrification. The rural electrification tariff presently is indirectly subsidised, being based on "what the traffic can bear" rather than on "services rendered". However, in view of all round increase in prices which have considerably increased the cost of rural electrification schemes, in some cases by as much as 30%, it is imperative that electricity tariffs are also increased. However, when increasing electricity tariffs, it should be kept in mind that agricultural tariff is not increased to a point beyond the reach of the farmers, specially in these backward areas. This would result in increased cost of foodgrains and agricultural products and will also act as a disincentive for the use of electricity which would be specially disastrous in those States, where what is required is to entice the agriculturist away from his traditional modes of agriculture and adopt modern methods with more electricity use. Premises, or the losses of the Boards could be considered to be expenditure of a promotional and developmental nature.

6.14. Limitation of the working season appears to be a difficulty in most of these States, either due to heavy monsoon rainfall, cyclone conditions, absence of communication facilities, difficult terrain etc. The Committee suggest that the State Electricity Boards/Departments/other executing agencies can effectively utilise the off-working season in looking after other aspects like Planning, Design, procuring materials, and above all coordinating with the other organisations/agencies, so that the short working season could be fully utilised for actual execution of the work in the field. Detailed and advance planning, done well in time is necessary for this purpose and all concerned should strive to attain this objective.

/ The agricultural tariff could, therefore, be based on the above

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( TO BE PUBLISHED IN THE GAZETTE OF INDIA PART I SECTION I )

GOVERNMENT OF INDIA  
MINISTRY OF IRRIGATION AND POWER

.....

Shram Shakti Bhawan,  
Rafi Marg, New Delhi,

Dated the 21st January, 1974.

R E S O L U T I O N

No.42(29)/73-P.E. In pursuance of the decision taken at the meeting of Consultative Committee for the Ministry of Irrigation & Power held on 2nd July, 1973 at Kodaikanal, Tamil Nadu, the Government of India have decided to constitute a Committee to visit the Eastern States where the progress of rural electrification has been slow so as to review their problems and make suggestions to improve the situation.

2. The Committee will consist of :-

- |  |                 |
|--|-----------------|
| 1. Prof. Siddheshwar Prasad,<br>Deputy Minister for Irriga-<br>tion & Power. | Chairman        |
| 2. Shri L.D. Koteki, M.L.  | Member          |
| 3. Shri Bhola Raut, M.L.   | Member          |
| 4. Shri Yashpal Kapoor, M.P.   | Member          |
| 5. Advisor/Director Power (alternate )<br>Planning Commission. सत्यमेव जयते  | Member-Co-opted |
| 6. Technical Director, R.E.C.  | Member-Co-opted |
| 7. Director, (RE), C.W. & P.C.   | Secretary       |

3. The terms of reference to the Committee shall be :-

- (i) To review the progress achieved in the matter of rural electrification in the States of Assam, Bihar, Manipur, Meghalaya, Nagaland, Orissa, Tripura and West Bengal;
- (ii) To identify the reasons for slow progress of rural electrification in these States and to recommend steps needed to be taken to accelerate the progress;
- (iii) To examine the adequacy of the provisions made by these States in their respective plans for rural electrification and the additional resources available from the institutional sources and make such suggestions as may be considered necessary.

4. The Committee will submit its report within a period of six months.

sd/- C.C. Patel )  
Additional Secretary

...

GOVERNMENT OF INDIA  
(BHARAT SAKSHI)  
MINISTRY OF IRRIGATION & POWER  
(SINCHAI AUR VIDYUT MANTRALAYA)

No.42(28)/74-P.E.

Shram Shakti Bhavan,  
Rafi Marg, New Delhi-110001

Dated, the 25th June, 1974

To

The Chairmen  
All State Electricity Boards

Subject :- Maximisation of the rural electrification  
programme within the available funds

Sir,

The necessity of speeding up rural electrification in the country can hardly be over-emphasised. For taking up a large programme of rural electrification, the financial constraint is one of the major bottlenecks, which limits this programme. However, considerable economies can be effected and construction work expedited by using local materials and following standardised construction practices, etc.

2. With a view to achieving the above objective, a few guidelines have been prepared, a copy of which is enclosed. I should think that some of the practices recommended are already being followed in your State. I am addressing this letter to you with a request that the recommendations may kindly be kept in view while planning and executing the rural electrification programmes.

Yours faithfully,

SI/- C.C. Patel  
Additional Secretary

Encl : as above

**GUIDELINES FOR MAXIMISING RURAL ELECTRIFICATION  
PROGRAMME WITHIN THE AVAILABLE FUNDS**

1. Use of wooden poles / jointed wood poles

Steel being costly and not available in adequate quantities, its use for line supports has to be dispensed with, as far as possible. Instead, locally available wooden poles, after proper treatment, may be used. This will not only expedite the work but also reduce the cost of line supports appreciably. To facilitate transport and use of shorter lengths of wooden poles, jointed wood poles may be used with proper splicing.

2. Use of reinforced cement concrete poles

When wooden poles are not available at economical rates and where weather conditions do not permit use of wooden poles, the reinforced cement concrete poles may be used. These poles are comparatively heavier. Hence in order to economise in transport costs, these poles may be manufactured in precast factories located close to the areas of use, as far as possible.

3. Use of pre-stressed concrete poles

These are lighter as compared to the reinforced concrete poles, the weight of each being nearly half a ton. Several prestressed factories have since been established in our country and designs based on accepted criteria are already available. Where wooden poles are not available within reasonable costs, pre-stressed concrete poles factories with production based on long-line method should be established at places close to the areas of use. These poles have to be transported with great care and handled with supports at appropriate places only.

4. Standardisation

Earlier, the Central Water & Power Commission had prepared construction manuals for rural lines, which are being generally followed in the country. Subsequently, this work of standardisation was transferred to the Indian Standards Institution. The Indian Standards Institution, in consultation with the Central Water & Power Commission and other organisations, have formulated various standards for materials required for rural electrification works, such as wooden poles, steel supports, concrete supports ( pre-stressed cement concrete / reinforced cement concrete), conductors, transformers, insulators, etc. They have also brought out a number of codes of practices for design, operation and maintenance of rural electrification lines and equipment. In addition, the Rural Electrification Corporation, after discussions with the Indian Standards Institution and Central Water & Power Commission, have brought out some Rural Line Standards and Specifications, based on the existing specifications prepared by the Indian Standards Institution and the Rural Line Standard Construction Manuals prepared by the Central Water & Power Commission. In these standards and specifications, efforts have been made to reduce the variety of equipment in rural electrification works and to standardise the rural electrification construction. No doubt, if the various construction works



## ANNEXURE II ( contd)

conform to these standards and specifications, substantial economies in rural electrification works can be achieved and the entire programme expedited.

### 5. Shramdan

The cost of labour in rural electrification works constitutes about 10 % of the cost of materials. The labour charges comprise 50% for the skilled and 50% for unskilled labour. To reduce the labour costs, efforts could be made to utilise local labour voluntarily or " Shramdan" as far as possible for doing non-skilled jobs for specific works benefiting a village or group of villages. The Panchayat Samities could mobilise local labour to provide "Shramdan" for electrification of their areas.

### 6. Preparation of a perspective plan

Often it is noticed that the transmission and distribution systems available in an area are not adequate even to cater to the existing loads. It, therefore, becomes very difficult to have further loads without strengthening the existing net-work. Such planned measures for strengthening and modification not only take considerable time but also involve additional costs. If, on the other hand, a perspective plan for the development of transmission and distribution system is prepared keeping in view the generating capacity available and the scope of the development of the areas, both with regard to rural electrification as well as other loads, it would be easier and expeditious to extend the distribution net-work in a phased manner. It is, therefore, necessary to study the possibilities of load growth in different areas and keep the matter under constant observations with a view to prepare long term load demands for each area. This would help in planning the distribution net-work on the right lines. सत्यमेव जयते

If the needs of a particular area are urgent or needs of a particular area are to be met with from local generation through micro-hydel sets or diesel sets, the distribution facilities will have to be provided for a limited area, which could consume the entire load. When, however, the grid-net-work covers such local areas, the micro hydel system can be linked up with the grid, the diesel sets could be shifted to other areas leaving the distribution net-work which would form part of the grid.

ANNEXURE IIITOTAL AREA, RURAL AREA AND  
POPULATION DENSITY

Sl. No.	States /Union Territories	Total Area * ( 1971 Census)	Rural Area * (1961 Census)	Population density ** (1971 census)
1.	Arunchal Pradesh	83,578	81,424	5.6
2.	Assam	78,523	78,508	137.0
3.	Bihar	1,73,876	1,71,320	325.0
4.	Manipur	22,356	22,329	43.0
5.	Meghalaya	22,489	22,511	45.0
6.	Mizoram	21,037	21,077	15.3
7.	Nagaland	16,527	16,462	31.3
8.	Orissa	1,55,842	1,54,316	140.5
9.	Tripura	10,477	10,320	149.0
10.	West Bengal	87,853	86,858	507.0
Total for Eastern States		6,72,603	6,65,925	211.3
TOTAL ( ALL-INDIA)		32,80,433	31,55,768	167.0

VKW :GS

(\*) Sq. Km. (\*\*) Persons /sq. Km.

RURAL, TRIBAL & HARIJAN POPULATION  
( AS PER 1971 CENSUS)

(In lac)

Sl. No.	States	Total	Rural	Tribal		Harijan (Scheduled Caste)	
				Pop.	% of total	Pop	% of total
1.	Arunachal Pradesh	4.60	4.50	3.69	79.0	(*)	(*)
2.	Assam	146.85	133.36	16.47	11.0	9.13	6.2
3.	Bihar	563.53	507.19	49.33	8.8	79.5	14.1
4.	Manipur	10.73	9.31	3.34	31.1	0.16	1.63
5.	Meghalaya	10.12	8.64	8.14	80.5	0.04	0.38
6.	Mizoram	3.32	2.95	3.13	94.2	(*)	(*)
7.	Nagaland	5.16	4.65	4.58	88.7	-	-
8.	Orissa	219.45	201.00	50.72	23.1	33.10	15.1
9.	Tripura	15.56	13.94	4.51	29.0	1.93	12.4
10.	West Bengal	443.12	333.45	25.33	5.7	88.16	19.9
.....							
Total for Eastern States				170.83			
				171.18	12.0	212.03	14.9
						799.96	
TOTAL (ALL INDIA)		5,479.49	4,388.55	380.15	6.9		14.6

(\*) - Negligible.

VKW/SSR  
11.12.74.

ANNEXURE VVILLAGES IN VARIOUS POPULATION GROUPS  
( As per 1961 Census)

Sl. No.	States	No. of villages having population		Total
		below 500	500 & above	
1.	Arunachal Pradesh	2,357	94	2,451
2.	Assam	13,540 ( 12,272) (*)	7,025 ( 9,723) (*)	20,565 (21,995) (*)
3.	Bihar	42,422	25,243	67,665
4.	Manipur	1,487 ( 1,453) (*)	379 ( 496) (*)	1,866 ( 1,949) (*)
5.	Meghalaya	4,235	172	4,407
6.	Mizoram	570	160	730
7.	Nagaland	581 ( 654) (*)	233 ( 301) (*)	814 ( 960) (*)
8.	Orissa	36,151	10,315	46,466
9.	Tripura	4,393	539	4,932
10.	West Bengal	22,291	16,163	38,454
.....				
Total for Eastern States		1,28,027	60,323	1,88,350
TOTAL ( ALL INDIA)		3,51,653	2,15,225	5,66,878

(\*) - As per 1971 c-ensus

## PLAN MISS INCREASE IN INSTALLED CAPACITY (M.W)

States/U.T's	AS on 31.12.50	AS on 31.12.1955	AS on 31.3.1961	AS on 31.3.1966	AS on 31.3.1969	AS on 31.3.1974 (Provisional)
1. Jharkhand Pradesh	N.A	N.A	N.A	N.A	1.80	N.A
2. Assam	3.362	4.743	19.430	159.537	158.20	209.00
3. Bihar	44.978	202.978	350.893	93.294(*)	239.18(*)	604.00(*)
4. Manipur	N.A	N.A	N.A	2.426	3.40	6.00
5. Meghalaya(+)	-	-	-	-	-	-
6. Mizoram(+)	-	-	-	-	-	-
7. Nagaland	-	-	Nil	0.725	2.00	2.00
8. Orissa	4.616	5.864	136.249	314.990	501.85	684.00
9. Tripura	N.A	N.A	N.A	2.393	2.89	5.00
10. West Bengal	522.294	548.853	753.656	1,067.190(*)	1,207.33(*)	1,333.00(*)
Total for Eastern States	575.250	762.430	1,260.228	1,640.555	2,118.65	2,843.00
TOTAL (ALL-INDIA)	1,712.515	2,694.817	4,579.051	9,027.019	12,957.27	18,456.00

{+} Included in Assam.  
 {\*} Excludes D.V.C. share.

SCM/SSR  
 16.12.74.

# ANNEXURE VII

## LENGTH OF TRANSMISSION / DISTRIBUTION LINES

AS ON 31.3.1973

(in Route Kms)

Sl. No.	States	Transmission lines		Sub Transmission lines		LT lines upto 330 volts	
		Total length	Length per 100 sq. Kms of area	above 66 kv and above	below 66 kv	Total length	Length per electrified village
1.	Andhra Pradesh	N.A.	-	N.A.	-	N.A.	-
2.	Assam	3,013	2.5	7,807	0.3	3,337	3.6
3.	Bihar	2,826	1.6	34,709	0.5	37,074	4.1
4.	Manipur	-	-	700	0.4	735	3.6
5.	Meghalaya	(*)	(*)	(*)	(*)	(*)	(*)
6.	Mizoram	(*)	(*)	(*)	(*)	(*)	(*)
7.	Nagaland	20	0.12	778	0.8	525	5.3
8.	Orissa	3,000	1.9	13,133	0.3	7,953	1.3
9.	Tripura	143	1.4	649	0.1	236	2.5
10.	West Bengal	1,711	2.0	17,607	0.5	12,394	2.3
Total for Eastern States		10,718	1.6	75,433	0.4	62,304	2.8
TOTAL (ALL INDIA)		88,620	2.07	5,62,008	1.0	7,71,616	5.5

(\*) Figures included in Assam

## ANNEXURE VIII

PLANWISE PROGRESS OF VILLAGE ELECTRIFICATION  
( AS PER 1961 CENSUS)

Sl. No.	States /Union Territories	NUMBER OF VILLAGES ELECTRIFIED DURING				
		First Plan	Second Plan	Third Plan	1966-1969	Fourth Plan
1.	Andhra Pradesh	-	2	20	24	13
2.	Assam	-	13	53	265	815
3.	Bihar	296	2,005	1,439	2,606	3,425
4.	Manipur	3	17	86	38	60
5.	Meghalaya	-	7	16	25	89
6.	Mizoram	N.A.	Nil	Nil	1	4
7.	Nagaland	-	7	4	30	95
8.	Orissa	25	93	416	237	7,645
9.	Tripura	-	12	19	17	55
10.	West Bengal	167	367	674	839	6,275
Total for Eastern States		491	2,523	2,727	4,132	18,476
TOTAL ( ALL INDIA)		4,233	14,456	23,394	23,578	82,548

PLANWISE PROGRESS OF IRRIGATION  
PUMPSETS/TUBEWELLS ENERGISED;

Sl. No.	States/Union Territories.	NUMBER OF PUMPSETS ENERGISED DURING				
		First Plan	Second Plan	Third Plan	1966-1969	Fourth Plan
1.	Arunachal Pradesh	Nil	Nil	Nil	Nil	Nil
2.	Assam	Nil	Nil	Nil	55	650
3.	Bihar	650	2,503	7,460	39,345	46,917
4.	Manipur	Nil	Nil	Nil	Nil	Nil
5.	Meghalaya	Nil	Nil	Nil	Nil	Nil
6.	Mizoram	Nil	Nil	Nil	Nil	Nil
7.	Nagaland	Nil	Nil	Nil	Nil	1
8.	Orissa	N.A.	N.A.	N.A.	477	2,202
9.	Tripura	Nil	Nil	Nil	2	30
10.	West Bengal	N.A.	56	381	762	5,336
.....						
Total for Eastern States.		650	2,559	7,841	40,641	55,224
.....						
TOTAL (ALL-INDIA)		35,045	1,42,841	3,13,837	5,76,018	13,52,653

...



POPULATION GROUPWISE VILLAGES ELECTRIFIED AND  
RURAL POPULATION COVERED BY ELECTRIFICATION  
AS ON 31.3.1974

Sl. No.	States/Union Territories.	VILLAGES ELECTRIFIED						% Rural population covered by electrification.
		Below 500		500 & Above		Total		
		No.	%	No.	%	No.	%	
1.	Arunachal Pradesh	32	1.4	27	28.7	59	2.4	10.3
2.	Assam	300(*)	2.5(*)	846(*)	8.7(*)	1,146(*)	5.2(*)	10.2
3.	Bihar	3,540	8.4	6,235	24.6	9,775	14.4	26.9
4.	Manipur	46(*)	3.2(*)	167(*)	33.7(*)	213(*)	10.9(*)	41.1
5.	Meghalaya	73	1.7	64	37.2	137	3.1	8.9
6.	Mizoram	Nil	Nil	5	3.1	5	0.7	2.9
7.	Nagaland	54(*)	8.2(*)	82(*)	27.2(*)	136(*)	14.1(*)	26.1
8.	Orissa	3,530	9.8	4,936	47.7	8,466	18.2	36.9
9.	Tripura	28	0.6	75	13.9	103	2.1	8.0
10.	West Bengal	2,490	11.2	6,218	38.5	8,708	22.6	36.7
.....								
Total for Eastern States		10,093	7.8	18,655	30.8	28,748	15.2	20.6
.....								
Total (All-India)		52,647	15.0	1,03,453	44.0	1,56,270	27.6	50.0

(\*) - As per 1971 Census.

PER CAPITA CONSUMPTION, AGRICULTURAL  
CONSUMPTION AND CONNECTED LOAD

Sl. No.	States	Per capita consumption during 1973-74 (KWH) (Estimated)	% Agricultural consumption to total consumption during 1972-73	Connected load as on 31.3.1973 (MW)	
				Total	Agricultural
1.	Arunachal Pradesh	N.A	N.A	N.A	N.A
2.	Assam	25.8	0.4	256.12	9.5
3.	Bihar	68.6	2.8	1443.63	252.69
4.	Manipur	8.0	Nil	5.76	Nil
5.	Meghalaya	(*)	N.A	N.A	N.A
6.	Mizoram	(*)	N.A	N.A	N.A
7.	Nagaland	22.2	Nil	15.90	0.01
8.	Orissa	87.5	0.5	494.84	23.73
9.	Tripura	6.1	2.3	10.15	0.25
10.	West Bengal	112.7	0.7	2361.11	27.36
.....					
Total for Eastern States.		33.1	2.02	4587.51	313.44
.....					
TOTAL (ALL-INDIA)		95.5	12.0	32254.51	8385.86

(\*) Included in Assam

...

SSR/21.2.75

# SCHEMES SANCTIONED BY RURAL ELECTRIFICATION CORPORATION

AS ON 31.10.1974

Sl. No.	States	No. of schemes	Cost of schemes	Sanctioned Loan	No. of villages	No. of I.P. sets	No. of Small Industries	Total sanctioned upto 31.10.1974
1.	Andhra Pradesh	-	-	-	-	-	-	-
2.	Assam	13	672.543	764.035	1,276	502	2,510	112,020
3.	Bihar	53	3,257.031	2,917.140	5,015	50,153	9,120	1,300,521
4.	Chhattisgarh	-	-	-	-	-	-	-
5.	Goa	2	49.207	47.205	63	35	110	10,371
6.	Gujarat	-	-	-	-	-	-	-
7.	Haryana	-	-	-	-	-	-	-
8.	Karnataka	46	2,421.010	1,079.369	3,792	30,610	5,034	766,000
9.	Kerala	-	-	-	-	-	-	-
10.	Madhya Pradesh	47	3,250.453	2,830.052	6,993	25,412	14,417	1,212,300
.....								
Total for Western States.		162	9,991.224	8,440.009	17,749	1,20,000	35,646	3,507,994
.....								
TOTAL (ALL-INDIA)		737	39,905.254	33,976.463	61,811	6,07,497	96,234	16,002,954

VKW/SSR  
20.3.75.

# ANNEXURE XIII

SCHHELS SANCTIONED BY RURAL ELECTRICIFICATION CORPN  
AS ON 31.10.1974 ( Category-wise details) Rs. in lacs

Sl. No.	States / Union Territories	OA	OC	UG	SU	ST
		No. Amount	No. Amount	No. Amount	No. Amount	No. Amount
1.	Arunchal Pradesh	- -	- -	- -	- -	- -
2.	Assam	- -	13 767.035	- -	- -	- -
3.	Bihar	6 263.00	33 2007.317	- -	5 242.874	3 193.678
4.	Manipur	- -	- -	- -	- -	- -
5.	Meghalaya	- -	- -	- -	2 47.205	- -
6.	Mizoram	- -	- -	- -	- -	- -
7.	Nagaland	- -	- -	- -	- -	- -
8.	Orissa	9 306.84	22 912.426	- -	5 131.081	6 349.378
9.	Tripura	- -	- -	- -	- -	- -
10.	West Bengal	17 1143.386	19 1207.62	- -	- -	4 284.690
Total for Eastern States		32 1713.226	87 4894.398	- -	12 421.160	13 827.746
TOTAL (ALL-INDIA)		300 14227.066	236 12597.55	- -	63 2352.301	20 1174.612

- Note (i) OA = Ordinary Advance Area  
(iii) OC = Rural Electric Co-operative Societies  
(iv) ST = Special Transmission lines  
(vii) MH = Health Centre based Mini Project  
(ix) MNP = Minimum Needs Programme

Contd 2 ...

Annexure XIII  
Contd.

SS		MH		MG		MN		PFA		TOTAL		Sl. No.
No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	13	767.035	2
-	-	1	7.991	4	32.242	2	170.046 <del>170.046</del>	-	-	54	2917.148	3
-	-	-	-	-	-	-	-	-	-	-	-	4
-	-	-	-	-	-	-	-	-	-	2	47.205	5
-	-	-	-	-	-	-	-	-	-	-	-	6
-	-	-	-	-	-	-	-	-	-	-	-	7
-	-	-	-	-	-	4	170.644	-	-	46	1879.369	8
-	-	-	-	-	-	-	-	-	-	-	-	9
-	-	3	13.070	1	6.919	3	182.367	-	-	47	2338.052	10
-	-	4	21.061	5	39.161	9	532.057	-	-	162	8448.809	
36	629.517	19	102.443	23	166.693	22	1016.138	13	189.312	737	33976.463	

(ii) OB = Ordinary Backward

(iv) SU = Specially Under-developed Hill, Desert & Tribal area

(vi) SS = System improvement

(viii) MG = Mini Growth Centre

(x) PFA = Potential Project Area

BASIC DISTRICTWISE DATA FOR ASSAM  
( 1971 CENSUS )

Sl. No.	DISTRICT	Total Area (Km <sup>2</sup> )	Total population	Tribal population	Total No. of villages	No. of villages electrified	Total No. of Towns	No. of T.P. sets energised as on 31.3.74
1.	Lakhimpur and Dibrugarh	12,792	24,22,719	2,06,300	3,044	231	10	35
2.	Sibsagar	8,909	18,37,369	1,25,311	2,345	196	6	52
3.	Nowgong	5,561	16,80,895	1,25,115	1,961	196	4	148
4.	Kamrup	9,863	28,54,183	2,98,090	3,144	154	12	196
5.	Darrang	8,775	17,36,188	1,85,640	2,530	220	5	68
6.	Goalpara	10,359	22,25,103	3,08,287	3,819	65	9	94
7.	Cachar	6,962	17,13,318	15,283	2,413	00	6	110
8.	North Cachar Hills	4,890	76,047	52,583	480	-	1	Nil
9.	Mikir Hills	10,332	3,79,310	2,10,039	1,451	4	Nil	2
Total:-		78,523	1,46,25,152	16,06,648	21,995	1,146	53(*)	705

(\*) Towns are as per 1961 Census.

All towns are electrified.

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LIST OF TRANSMISSION LINES PROPOSED IN ASSAM

Sl. No.	Name of lines	Voltage & No. of Circuits	Route length in Kms.
1.	Umiam-Umkhen to Chandrapur	220 KV D/C	100
2.	Mariahi to Naharkatia	132 KV D/C	150
3.	Naharkatia to Dibrugarh	132 KV D/C	50
4.	Gauhati to Bongaigaon	132 KV S/C	150
5.	Umiam-Umkhen to Badarpur	132 KV S/C	131
6.	Tenga to Tezpur	132 KV S/C Arunachal Pradesh (on D/C Towers), Assam.	25
7.	Tenga to Mariahi	132 KV S/C Arunachal Pradesh (on D/C Towers), Assam	100
8.	Dimapur to Garampani	132 KV D/C	100
9.	Gauhati to Daina Dubi (Garowills).	132 KV D/C	120
10.	Naharkatia to Margherita	132 KV S/C	50

....

VKW/SSR

12.12.74.

**BASIC DISTRICTWISE DATA FOR BIHAR**  
( 1971 CENSUS )

Sl. No.	District	Total Area (Km <sup>2</sup> )	Total population	Tribal population	Total No. of villages (*)	No. of vill-ages (*) electrified as on 31.3.74	Total No. of Towns	No. of I.P. sets energised as on 31.3.73
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**NORTH BIHAR**

1.	Saran	6,952	42,79,253	1,433	4,425	579	6	1,965
2.	Champaran	9,196	35,43,103	22,860	2,642	405	9	1,195
3.	Muzaffarpur	7,838	48,40,681	766	4,147	540	6	4,559
4.	Darbhanga	8,679	52,33,904	335	3,143	582	6	2,215
5.	Saharsa	5,885	23,50,268	9,159	1,195	96	6	280
6.	Purnea	11,013	39,41,863	1,55,813	3,687	147	8	484
SUB-TOTAL:-		49,563	2,41,89,072	1,90,366	19,239	2,349	41	10,698

**SOUTH BIHAR**

7.	Patna	5,528	35,56,945	2,276	2,335	1,279	10	24,987
8.	Gaya	12,344	44,57,473	1,538	6,236	1,876	10	24,573
9.	Shahabad	11,320	39,39,034	38,726	4,757	1,452	9	14,888
10.	Monghyr	9,827	38,92,609	54,916	3,464	897	13	6,317
11.	Bagalpur	5,656	20,91,103	75,056	2,489	377	5	1,704
SUB-TOTAL:-		44,675	1,79,37,164	1,72,512	19,281	5,881	47	72,469

**CHOTA NAGPUR**

12.	Santal-Parganas	14,129	31,86,908	11,54,881	10,068	373	10	622
13.	Palamau	12,677	15,04,350	2,87,150	3,194	348	5	1,451
14.	Hazaribagh	18,060	30,20,214	3,31,798	6,162	382	10	1,138
15.	Ranchi	18,331	26,11,445	15,16,698	3,858	140	9	820
16.	Dhanbad	2,994	14,66,417	1,55,645	1,462	209	19	277
17.	Singhbhum	13,447	24,37,799	11,24,317	4,401	93	12	182
SUB-TOTAL:-		79,638	1,42,27,133	45,69,889	29,145	1,545	65	4,490

GRAND TOTAL:-		1,73,876	5,63,53,369	49,32,767	67,665	9,775	153	97,657
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(\*) As per 1961 Census.  
All towns are electrified.



ANNEXURE-XVIICIRCLEWISE LENGTHS OF TRANSMISSION/DISTRIBUTION LINES EXISTING  
IN BIHAR AS ON 31.3.1973.

Sl. No.	Name of Circle	220 KV	132 KV	33 KV	11 KV	400/230 - V
1.	Patna	-	-	941.54	4,177.46	6,792.62
2.	Gaya	-	-	1,091.92	5,639.03	12,101.17
3.	Ranchi	-	-	1,202.71	2,373.43	1,700.67
4.	Dhanbad	-	-	637.20	2,693.07	2,334.04
5.	Bhagalpur	-	180.00	1,082.60	3,393.53	3,562.21
6.	Purnea	-	-	529.60	2,198.07	2,389.22
7.	Darbhanga	-	-	342.20	1,997.89	2,046.94
8.	Muzaffarpur	-	-	791.36	4,953.00	4,812.85
9.	Barauni Thermal Power Station.	-	-	-	10.00	30.00
10.	P.T.P.Station.	-	-	5.00	41.00	90.00
11.	N.B.T.C.Muzaffar Pur	-	651.58	-	-	-
12.	S.B.T.C.Ranchi	558.00	1,436.36	-	-	-
Total:-		558.00	2,267.94	6,624.13	27,476.53	<del>35,859.75</del> 35,859.75

VBG/SSR  
9.12.74.

**SECTIONWISE TRANSMISSION LINES  
EXISTING/UNDER CONSTRUCTION/PROPOSED IN BIHAR**

Sl. No.	Section	No. of Circuit	Route length in Kms
<b>220 KV</b>			
1.	Patratu-Gaya	D/C	138
2.	Patratu-Chandil	D/C	146
3.	Gaya-Dehri	S/C	80
4.	Chandil-Joda	S/C	135
5.	Dehri-Mughalsarai	S/C	123
<b>132 KV</b>			
1.	Patratu-Hatia	D/C	467
2.	Maithon- Deoghar	S/C	92
3.	Deoghar-Sultanganj	S/C	86
4.	Mosabani-Dalbhumgarh	J/C	11
5.	Goelkeru-Rajkharwan	S/C	55
6.	Rajkharwan-Kendposi	S/C	58
7.	Gaya-Patna	D/C	93
8.	Gaya-Barun	D/C	77
9.	Chandil-Jamshedpur	D/C	44(proposed under V Plc
10.	Jamshedpur-Mosabani	D/C	40(Under Construction)
11.	Gaya-Bihar Shariff-Barauni	S/C on D/C Tower	136
12.	Barauni-Samastipur	D/C	61
13.	Samastipur- Muzaffarpur	D/C	52
14.	Barauni-Furnea	S/C on D/C Tower	192
15.	Samastipur-Chapra	S/C	117(Proposed under V Plc
16.	Rajkharwan-Chandil	S/C नये	19
17.	Khondposi-Noamundi	S/C	32
18.	Dehri- Jamaron	S/C on J/C Towers	96
19.	Furnea-Kosi	S/C	107
20.	Chandil- Adityapur	S/C	NA
21.	Kendposi - Joda	S/C	NA
22.	Goelkeru- Rourkela	S/C	NA
23.	Chandauli -Boudh Gaya	D/C	NA
<b>B- UNDER CONSTRUCTION</b>			
24.	Muzaffarpur - Motihari	S/C	85
25.	Samastipur- Dharbanga- Madhubani	S/C	60
26.	Chapra -Mirganj (SIWAN)	S/C	64
27.	Furnea- Saharsa	S/C	80
28.	Furnea- Dalkhola	S/C	44
29.	Muzaffarpur- Sitamarhi	S/C	65

Contd.....

ANNEXURE XVIII (Contd.)

<u>Sl. No.</u>	<u>Section</u>	<u>No. of Circuit</u>	<u>Route length in Kms</u>
30.	Motihari- Gander	S/C	137
31.	Dehri- Banjari	S/C	36
32.	Dumraon- Arrah	S/C	53
33.	Ahityapur- Rajkibarsan	S/C	33
34.	Sultang- Sahibganj	S/C	90
35.	Hatia- Sagarrekha	S/C	66
36.	Chandil- Jhumshepur	S/C on towers	44
37.	Hathidah- Sultang	S/C	97
38.	Katrat- Lohar	S/C	80
39.	Burhan- Purnea	S/C	192

C-INDOOR FOR FIETH PLAN

Phase I

400 KV	436
220 KV	152
132 KV	111

Phase II

400 KV	62
220 KV	122
132 KV	111

Phase III

400 KV	436
220 KV	192
132 KV	560



सत्यमेव जयते

BASIC DISTRICTWISE DATA FOR ORISSA  
( 1971 CENSUS )

Sl. No.	District	Total Area ( Km <sup>2</sup> )	Total Population.	Tribal population.	Total No. of villages	No. of villages electrified as on 31.3.74	Total No. of Towns	No. of I.P. Sets Energised as on 31.3.74
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( COASTAL DISTRICTS )

1.	Balasore	6,394	18,30,504	1,29,192	3,823	687	5	280
2.	Cuttack	11,211	38,27,678	1,10,746	5,883	2,168	8	1,140
3.	Ganjam	12,527	22,93,808	2,28,945	3,773	1,070	11	435
4.	Puri	10,159	23,40,859	86,591	4,374	996	4	<del>107</del> 7)

( OTHER DISTRICTS )

5.	Sambalpur	17,570	16,44,898	5,19,046	3,393	495	6	<del>40</del> 43
6.	Sundargarh	9,675	10,30,758	5,50,401	1,588	468	4	<del>70</del> 73
7.	Keonjhar	8,240	9,55,514	<del>4,48,625</del> 1,973	<del>4,48,625</del> 1,973	<del>423</del> 423	8	<del>40</del> 42
8.	Mayurbhanj	10,412	14,34,200	8,99,835	3,671	<del>436</del> 536	8	<del>100</del> 105
9.	Bhankana	10,826	12,93,914	1,66,990	2,512	<del>300</del> 750	4	196
10.	Baudhkhondmals ( Phulbani )	11,070	6,21,675	2,50,605	4,471	59	1	12
11.	Bolangir	8,903	12,63,657	2,49,131	2,524	347	5	<del>109</del> 157
12.	Kalahandi	11,835	11,63,869	3,40,541	2,902	136	3	51
13.	Koraput	27,020	20,43,281	11,51,231	5,579	337	7	206
.....								
TOTAL:		1,55,842	2,19,44,615	50,71,937	46,466(*)	8,466(*)	68(*)	<del>2,759</del> 2,759

(\*) AS PER 1961 CENSUS

ALL TOWNS ARE ELECTRIFIED.

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**SECTIONWISE TRANSMISSION LINES EXISTING/  
UNDER CONSTRUCTION IN ORISSA**

Sl. No.	Name of the line	No. of Circuit	Route Length (Kms)
---------	------------------	----------------	--------------------

**A 220 KV**

i)	Joda-Falcher	S/C on D/C towers	148
ii)	Talcher-Theruvalli	D/C (Under construction)	330
iii)	Theruvalli-Ballinela	D/C (Under construction)	225
iv)	Falcher-Pijora	D/C (Under construction)	149

**B. 132 KV**

i)	Hirakul I- Hirakul II	S/C	23
ii)	Hirakul I- Chainpal	S/C	179
iii)	Chainpal- Choudwar	S/C	36
iv)	Talcher - Chainpal	D/C	3
v)	Talcher- Jajpur	S/C	100
vi)	Hirakul I-Jharsuguda	D/C	51
vii)	Kajgangpur- Kourkela	S/C	29
viii)	Jharsuguda- Kourkela	D/C	108
ix)	Kajgangpur- Hirakul-I	S/C	130
x)	Kourkela- Joda via Barjainai	S/C	77
xi)	Choudwar- Khurda	S/C	56
xii)	Jharsuguda-Brajrajnagar	S/C	7
xiii)	Machkuni- Jeypore	S/C	43
xiv)	Jeypore-Nayagada	S/C	108
xv)	Nayagada- Behrapur	S/C	177
xvi)	Behrapur- Ganjan	S/C	36
xvii)	Nayagada- Theruvalli	S/C	18
xviii)	Jeypore-Sonebeda	S/C	43

**C Under Construction**

xix)	Khurda-Bhubneshwar	S/C	30
xx)	Behrapur-Jska	S/C	38
xxi)	Jajpur road-Balusore	S/C	108
xxii)	Jajpur road- Khurda	S/C	36
xxiii)	Theruvalli-Kesinga	S/C	105
xxiv)	Kesinga-Bolangir	S/C	72
xxv)	Nayagada-Theruvalli	S/C	19
xxvi)	Chainpal-Choudwar	S/C	87
xxvii)	Chainpal-Falcher(Industrial)	S/C	8
xxviii)	Khurda-Ganjan	S/C	112

**ANNEXURE - XXI**

**BASIC DISTRICTWISE DATA FOR WEST BENGAL**  
**( 1971 CENSUS )**

Sl. No.	District	Total Area (Km <sup>2</sup> )	Total popu- lation	Tribal popula- tion	Total No. of villages	No. of Total villages of electri- fied as towns	Total No. of I.P.Sets energiz- ed as
						31-3-74	131-3-74

**NORTH BENGAL**

1.	Darjeeling	8,075	7,81,777	1,08,586	536	216	4	1
2.	Jalpaiguri	6,245	17,50,159	4,28,595	774	201	7	Nil
3.	Cooch-Bihar	3,386	14,14,183	10,611	1,135	122	6	96
4.	West Dinajpur	5,206	18,59,887	2,21,317	3,130	239	6	291
5.	Mulda	3,713	16,12,657	1,30,715	1,602	490	2	470
SUB-TOTAL		21,625	74,18,663	8,99,824	7,177	1,268	25	771

## WESTERN DISTRICTS

6.	Birbhum	4,550	17,75,909	1,25,250	2,234	457	6	399
7.	Bankura	6,881	20,31,039	2,08,735	3,550	525	5	94
8.	Purulia	6,259	16,02,875	3,13,793	2,490	403	5	Nil
SUB-TOTAL		17,690	54,09,823	6,47,778	8,274	1,385	16	493

**DELTAIC PLAIN**

9. Murshidabad	5,341	29,40,204	33,947	1,932	569	9	1,272
10. Nadia	3,926	22,30,270	31,799	1,279	808	12	1,417
11. Calcutta	104	31,48,746	2,408	-	-	1	-
12. Howrah	1,474	24,17,286	3,364	787	377	23	136
13. Hooghly	3,145	28,72,116	1,00,084	1,910	872	16	552
14. Burdwan	7,028	39,16,174	2,23,605	2,665	1,071	19	852
SUB TOTAL	21,018	1,75,24,796	4,05,207	8,573	3,697	80	4,229

COASTAL DISTRICTS:

15. 24-Parganas	13,796	84,49,482	1,37,197	3,812	1,133	49	620
16. Midnapore	13,724	55,09,247	4,42,963	10,618	1,225	14	422
SUB TOTAL	27,520	1,39,58,729	5,80,160	14,430	2,358	63	1,042

TOTAL 37,853 4,43,12,011 25,32,969 38,454(\*) 8,708(\*) 184(\*) 6,535

(\*) As per 1961 census  
182 towns electrified

ANNEXURE XXII

**LENGTH OF TRANSMISSION / DISTRIBUTION  
LINES EXISTING IN WEST BENGAL AS ON 31.3.1973**

Sl. No.	NAME OF DIVISION	1.5 KV Lines (Kms)		11 KV Lines (Kms)	
		O.H.	U.G.	O.H.	U.G.
1.	Bankura	484.3	-	650.0	0.7
2.	Birbhum	217.7	1.6	424.5	9.2
3.	Burdwan	813.0	-	1711.0	23.5
4.	Cooch-Behar	103.0	-	235.0	3.3
5.	Hooghly	566.2	37.0	804.0	10.9
6.	Howrah	313.5	1.2	234.0	9.0
7.	Jalpaiguri	125.0	20.0	450.0	1.6
8.	Malda	220.0	-	815.8	3.4
9.	Midnapore	353.0	6.5	1471.0	6.4
10.	Murshidabad	317.6	5.0	1200.0	6.3
11.	Nadia	776.6	6.5	1551.0	35.6
12.	24-Parganas (South)	440.6	131.6	325.5	2.0
13.	24-Parganas (North)	1160.0	12.6	1154.4	44.4
14.	Siliguri (Darjeeling)	232.9	-	90.0	1.0
15.	West Dinajpur	79.9	-	233.0	-
16.	Bandel	13.0	-	-	-
TOTAL		6236.3	222.3	11400.0	162.8
		6458.1		11562.8	

N.B. Figures have been furnished by the West Bengal State Electricity Board. However, as per the General Review 1972-73, the lengths of distribution lines (L.J.) upto 500 V and 15/11 kv transmission lines are respectively 12394 Km and 12037 Km

**SECTIONWISE LENGTHS OF TRANSMISSION LINES EXISTING/  
UNDER CONSTRUCTION/PROPOSED (JURING FIFTY PLAN)  
IN WEST BENGAL**

Existing lines	No. of Circuits	Route length (Kms)
----------------	-----------------	--------------------

**220 KV**

1. Santaldih-Jurgapur	2/C	100
-----------------------	-----	-----

**132 KV**

1. Ashoknagar-Kasba	2/C	60
2. Santaldih-Furulia	2/C	35
3. Sonarpur-Kasba	2/C	13
4. Jurgapur-Gokarna via Sainthia	2/C	120
5. Kolaghat-Haldia	2/C	50
6. Raiganj-Balurghat	2/C	125
7. Ashoknagar-Jhurampur	2/C	22
8. Bandel-Jurgapur (WB)	2/C	134
9. Bandel-Rishra	2/C	31
10. Bandel-Howrah (WB)	2/C	59
11. Bandel-Jhurampur	2/C	17
12. Bandel-Adisaptagram	2/C	62
13. Jhurampur-Kanaghat	2/C	26
14. Jhurampur-Fitagadh	2/C	29
15. Sonarpur-Behala	2/C	17
16. Howrah (WB) - Lilooah	2/C	12
17. Lilooah- Hind Motor	2/C	12
18. Hind Motor-Rishra	2/C	11
19. Rishra- Lilooah	2/C	15
20. Belmuri-Adisaptagram	2/C	30
21. Burdwan- Belmuri	2/C	30
22. Belmuri- Howrah (JVC)	2/C	49
23. Howrah (JVC) -Kolaghat	2/C	57
24. Kolaghat- Khuragpur	2/C	69
25. Howrah (JVC)-Khuragpur	2/C	127
26. Howrah (WB) - Behala	2/C	22
27. Gokarna- Farukka	2/C (on 2/C towers)	110
28. Howrah (WB) - Howrah (JVC)	Cable	1/6
29. Howrah (WB) - Gardenreach	Cable	6

**UNDER CONSTRUCTION****220 KV**

1. Santaldih- Howrah	2/C	250
2. Jurgapur- Bokanda	2/C	240



Under Construction	No. of Circuits	Route Length (Kms)
--------------------	--------------------	--------------------

132 KV

1. Farakka-Khajuriaghat	D/C Cable	8
2. Khajuriaghat-Malda	D/C	35
3. Malda-Rajgunj	S/C on D/C tower	80

Inter State

1. Dalkhola-Siliguri	132 KV, S/C	128
2. Santaldih-Chandrapura	220 KV, S/C	64
3. Chandrapura-Maria ( DVC) Durgapur ( WBSEB)	220 KV, S/C on D/C Towers	158
4. Alipurduar-Sankosh- Bongaigaon (Assam)	S/C	40

Proposed During V Plan	Voltage & No. of Circuits	Route Length (Kms)
------------------------	------------------------------	-----------------------

A) Bandel 5th ( 200 MW) Part of  
Santaldih 3rd & 4th Unit

Matching scheme 1) Bandel- Adisaptagram	132 KV, D/C	8
2) Belmuri- Arumbaz	132 KV, S/C	45
3) Ashoknagar- Kasba loop in & out at Salt Lake	132 KV, D/C	5
4) Dharampur- Ranaghat S/C loop in & out at Kalyani	132KV, D/C	5

/ S/C

B) Kolaghat + (2x200 MW) Evacuation Scheme

1) Kolaghat P.S.- Howrah	220 KV, D/C	60
2) Kolaghat PS Barasat	220 KV, D/C	150
3) At Howrah end (UG cable)	220 KV, D/C	3
4) Uluberia- Buzbuz(UG Cable)	220 KV, D/C	1.5

## ANNEXURE- XXIII ( Contd)

Proposed During V P-Ian	Voltage & No. of Circuits	Route Length (Kms)
-------------------------	------------------------------	-----------------------

## B) Kalaghat + ( 2x200 Mw) Evacuation Scheme ( contd)

5) Kolaghat -Haldia	132 KV S/C on D/C Tower	50
6) Egra-Haldia	132 KV, S/C	50
7) Ranaghat-Antala	132 KV, S/C	110
8) Ashok Nagar-Bongaon	132 KV, S/C	
9) Ruparayan River- X ing	on D/C Tower	26
1) For Kolaghat-Howrah O/H	220 KV, D/C	
ii) for Kolaghat-Barasat O/H	220 KV, D/C	

C) Dalkhola ( 2 x 120 Mw) Evacuation Scheme

1) Dalkhola-N.B.U.	220 KV, S/C	112
2) Durgaupur-Dalkhola	220 KV, S/C	297
3) Farakka-Khejuriaghat (UG Cable)	220 KV, S/C	0.270
4) Dalkhola F.S.-Dalkhola S/S	132 KV, S/C	5
5) Dalkhola-Raiganj	132 KV, S/C	50
6) Raiganj-Balurghat	132 KV, S/C	125
7) N.B.U. - Suktiapukuri	132 KV, S/C	40
8) Malda-Raiganj	132 KV, S/C	80
(Stringing only)		

D) North Bengal Matching Scheme

1) Chalsa-N.B.U.	132 KV, S/C	40
2) Jaldakha-I-Jaldakha-II-Chalsa	66 KV, D/C	25
3) Chalsa-Chapramari	66 KV, D/C	8
4) N.B.U.-Jalpaiguri	66 KV, S/C	50
5) Birpara -Changrabandha	66 KV S/C	50

PHASE- II

1) Ramnam- Ghoom	132 KV 2 x S/C	35
2) Chalsa-Alipurduar	132 KV S/C	96
3) Jalpaiguri-Changrabandha	66 KV, S/C	40

ANNEXURE-XXIV

ACTUAL INVESTMENT ON POWER, R.E. PROGRAMMES AND ALL  
SECTORS IN VARIOUS PLAN PERIODS.

		(Rs. in Crores)					
Sl. No.	States/Union Territories	Ist Plan			IInd Plan		
		Total plan investment.	Invest- ment on power.	Investment on R.E.	Total plan investment.	Invest- ment on power.	Invest- ment on R.E.
1.	Arunachal Pradesh	N.A	N.A	N.A	N.A	N.A	N.A
2.	Assam	28	1.40	0.02	63.15	5.00	0.21
3.	Bihar	102	9.45	0.09	176.87	29.46	2.17
4.	Manipur	1.08	0.09	-	6.22	0.42	N.A
5.	Meghalaya	N.A	N.A	N.A	N.A	*	N.A
6.	Mizoram	N.A	N.A	N.A	N.A	*	N.A
7.	Nagaland	N.A	Nil	Nil	N.A	0.23	0.14
8.	Orissa	85	4.82	0.28	89.36	22.90	1.89
9.	Tripura	1.62	0.15	-	9.41	0.34	N.A
10.	West Bengal	154	2.56	1.22	155.84	13.57	0.30

.....

(\*) Figures included in Assam.

OPS/SSR  
19.3.75.

ANNEXURE-XXIV  
contd.

(Rs. in Crores)

Total plan invest- ment.	IIIrd Plan			1966-69		IVth Plan			S No
	Invest- ment on power.	Invest- ment on R.E.	Total invest- ment.	Invest- ment on power.	Invest- ment on R.E.	Total plan invest- ment (Antici- pated)	Invest- ment on power (Anti- cipated)	Invest- ment on RE (Anti- cipated)	
N.A	N.A	N.A	N.A	N.A	N.A	N.A	1.42	1.41	1
132.24	41.71	0.43	87.12	22.21	3.13	261.75	32.85	6.25	2
331.74	94.05	4.34	217.37	66.30	14.87	531.20	119.97	35.16	3
12.81	0.59	N.A	7.20	0.89	N.A	30.25	3.26	1.20	4
N.A	*	N.A	N.A	*	N.A	37.44	1.73	1.42	5
N.A	*	N.A	N.A	*	N.A	N.A	2.40	0.26	6
10.79	0.85	0.14	15.93	1.48	0.07	40.00	3.14	0.27	7
224.59	51.71	3.70	122.75	33.16	2.30	222.60	87.51	29.00	8
15.51	0.50	N.A	11.44	2.44	N.A	34.66	9.39	0.50	9
300.40	77.31	0.60	161.46	32.00	2.66	322.50	111.55	32.95	10
.....									

\* allocation

Source: Planning Commission.

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OFS/SSR  
20.3.1975.

**Outlay and Actual Investment on Rural Electrification  
during IV Plan.**

Sl. No.	States	IV Plan Outlay for RE (as per IV Plan document)	(Rs. in Crores)			
			State Plan	REC	Institutional	Total
1.	Arunachal Pradesh	1.40	1.41	-	-	1.41
2.	Assam	10.88	4.34	1.91	NA	6.25
3.	Bihar	36.00	19.27	13.00	2.89	35.16
4.	Manipur	0.79	1.20	-	-	1.20
5.	Meghalaya	Included in Assam	1.25	0.17	-	1.42
6.	Mizoram	-do-	0.26	-	-	0.26
7.	Nagaland	0.07	0.27	-	-	0.27
8.	Orissa	6.05	13.13	7.86	8.01	29.00
9.	Tripura	0.30	0.50	-	-	0.50
10.	West Bengal	10.00	18.54	11.29	3.12	32.95
.....						
	Total for Eastern States	65.49	60.17	34.23	14.02	108.42
	Total (All-India)	294.69	455.03	161.87	201.77	818.67
	R.E.C. (Total India)	171.00				
	Total:-	<u>465.69</u>				

Source: Planning Commission.

OPS/SSR  
19.3.75

**OUTLAY AND TARGET UNDER MINIMUM NEEDS  
PROGRAMME FOR RURAL ELECTRIFICATION DURING  
FIFTH PLAN.**

Sl. No.	States	Outlay under MNF (Rs. in crores)	Target Area/District recommended for coverage	Total No. of villages to be electrified.
1.	Arunachal Pradesh	Nil	Nil	Nil
2.	Assam	22.00	10 Districts including hill Areas.	2,800 (including 200 villages in the hill areas.
3.	Bihar	45.00	Six districts with high scheduled caste/tribe population i.e. Santal Parganas, Palamau, Hazaribagh, Ranchi, Dhanbad & Singhbhum.	7,500
4.	Manipur	2.00	Hill areas	650
5.	Meghalaya	3.00	Throughout the State	1,000
6.	Mizoram	1.00	N.A.	20
7.	Nagaland	3.00	Backward areas (throughout state)	200
8.	Orissa	18.92	Backward/Tribal areas/districts of Balasore, Bolangir, Kalahandi, Keonjhar, Koraput, Mayurbhanj, Phulbani and Sambalpur.	2,312
9.	Tripura	8.00	Throughout the State	1,000
10.	West Bengal	27.00	N.A.	3,800
.....				
Total for Eastern States		129.92		19,232
-----				
Total (All-India)		272.33		36,551
-----				

**VIABILITY CRITERIA AND TERMS OF  
MINIMUM NEEDS PROGRAMME LOANS**

Classification	Code	Period of loan	Moratorium	Interest payable (There is 1/4% rebate on interest at all stages for prompt payment)			Viability Criteria
				Upto 10 yrs	Upto 11-20 yrs	Upto 21-30 yrs	

M.N.P.  
(Minimum  
Needs  
Programme)

30 yrs      5 yrs

6%

6 1/4%

7 1/4%

In all MNP Areas other than Tribal Hill & Desert (MNP) Areas      Net Minimum Return on the capital base

At the end of (-) 6% p.a. 5th year

At the end of Break-even 15th year

At the end of 3 1/4% p.a. 25th year

In Tribal Hill & Desert (MNP Areas)

At the end of 7th year (-) 6% p.a.

At the end of 15th year Break-even

At the end of 25th year 3 1/4% p.a.

**REMARKS**

- 1) Ordinarily the coverage of a project under the programme will be confined to villages only, a village being one defined so, for the purpose of census, provided, however, that in Specially Under developed hill and tribal areas, small towns having population of not exceeding 20,000 lying contiguous to the villages proposed to be covered under the project, may also be included; and

ANNEXURE XXVII- CONFD

- ii) The size of an individual project in terms of outlay involved should not exceed Rs. 75 lakhs to Rs. 80 lakhs.
- iii) In the case of rural electrification projects sponsored under the Minimum Needs Programme, wherever necessary, provision for 33 kV sub-stations and lines may be made, but in States where there is provision under the Minimum Needs Programme for sub-transmission, the loan for 33 kV component will also be governed by the MNP terms. In the other cases i.e., in States where there is no separate provision for sub-transmission under the Minimum Needs Programme, the loan for the 33 kV component will be governed by the regular terms and conditions for S.T. loans. In either case i.e., in either of the above two alternatives the entire cost of 33 kV component will qualify for loan assistance but the cost of the 33 kV component will be excluded from the capital base in the computation of net return for examining the financial viability.
- iv) The relaxations considered necessary and agreed to in the case of S.T. loans in MNP areas are as listed below :

In the areas covered for rural electrification under the Minimum Needs Programme the Corporation's loan assistance will be to the full extent of project cost as against 80% only in other areas

The present criteria of viability of the ST schemes (Vide alternative II) which stipulates that an ST scheme in order to be eligible for loan assistance should be such as will generate the area electrification schemes in terms of outlay, 'twice the cost of the ST schemes before the end of the loan period' will in respect of such ST schemes from MNP areas stand modified as 'not less than the cost of the ST scheme before the end of the loan period'. In other words in the case of S.T. schemes from MNP areas it will be sufficient if in terms of financial outlay the area scheme generated is equal to the outlay of the ST scheme itself.

In States where there is a separate provision for sub-transmission under the Minimum Needs Programme, the 33 kV lines and 33/11 kV sub-station component of the Special Transmission schemes in MNP areas should be eligible for loan assistance on MNP terms and conditions.



ANNEXURE- XXVIII

COMMITTEE ON RURAL ELECTRIFICATION IN EASTERN STATES.

FIFTH PLAN TARGETS  
(AS PER DRAFT FIFTH PLAN )

Sl. No.	States /Union territories	ELECTRIFICATION OF VILLAGES UNDER			I.P. Sets. energisation under N.D.P.
		M.N.P.	N.D.P.	Total	
1.	Arunachal Pradesh		N.A.		
2.	Assam	2,800	510	3,310	9,540
3.	Bihar	7,500	1,542	9,042	28,620
4.	Manipur	650	-	650	-
5.	Meghalaya	1,000	-	1,000	-
6.	Mizoram		N.A.		
7.	Nagaland	200	-	200	
8.	Orissa	2,312	2,312	4,626	47,240
9.	Tripura	1,000	-	1,000	
10.	West Bengal	3,800	2,860	6,660	43,000
.....					
Total for Eastern States		19,262	7,226	26,488	1,28,400
TOTAL ( ALL-INDIA)		36,551	32,549	69,100	8,14,800
R.E.C. PROGRAMME				41,108	7,63,200
					000
				1,10,208	15,78,000

**COMMITTEE ON RURAL ELECTRIFICATION IN  
EASTERN STATES**

**1974-75 Outlays**

		(Rs. in Crores)			
Sl. No.	States/U. Ts	Minimum Needs Programme	Normal Development Programme	Rural Electrification Grant	Total
1.	Arunachal Pradesh	Nil	0.48	Nil	0.48
2.	Assam	1.60	1.00	1.00	3.60
3.	Bihar	4.00	1.00	4.90	9.90
4.	Manipur	0.10	0.20	Nil	0.30
5.	Meghalaya	0.50	Nil	0.10	0.60
6.	Mizoram	0.12	0.48	Nil	0.60
7.	Nagaland	0.11	0.45	Nil	0.56
8.	Orissa	3.00	Nil	3.25	6.25
9.	Tripura	0.50	Nil	Nil	0.50
10.	West Bengal	2.50	Nil	4.65	7.15
Total for Eastern States		12.43	3.61	13.90	29.94
Total (All-India)		21.53	15.67	52.00*	89.20

\* Based on break up made available by R.E.C and includes Rs.0.55 crores for Rural Electric Co-operatives.

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SSR/21.2.75.

**STATEMENT SHOWING TARGETS AND ACHIEVEMENT  
DURING 1974-75**

Sl. No.	States/Union Territories	VILLAGES		Irrigation pumpsets	
		Target	Achievement *	Target	Achievement *
1.	Arunachal Pradesh	7	2	Nil	Nil
2.	Assam	700	N.A	2,000	N.A
3.	Bihar	1512	61	13,115	2,409
4.	Manipur	30	Nil	12	Nil
5.	Meghalaya	225	N.A	200	N.A
6.	Mizoram	10	Nil	Nil	Nil
7.	Nagaland	43	12	Nil	Nil
8.	Orissa	840	1,142	1,000	117
9.	Tripura	30	Nil	12	Nil
10.	West Bengal	700	519	700	193(upto 31.8.74)
.....					
Total for Eastern States		4,097	1,736	17,039	2,719
.....					
TOTAL (ALL-INDIA)		11,818	4,539	1,93,639	87,724

\*During 1.4.1974 to 30.9.1974 ( 6 months)

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SSR/21.2.75

ANNEXURE XXVI

COMMITTEE ON RURAL ELECTRIFICATION  
IN EASTERN STATES

Requirement of Materials for V Plan

Sl. No.	States/U. Ts	(M. Tons)		
		Aluminium for ACSR, AAC, Binding wire & Bus bars.	Mild steel for supports, foundations, base plates re-inforcement etc.	Cement
1.	Arunachal Pradesh	N.A	N.A	N.A
2.	Assam	16,530	19,132	70,805
3.	Bihar	19,200	75,303	40,500
4.	Manipur	632	2,100	700
5.	Meghalaya	+	+	+
6.	Mizoram	000	002	Nil
7.	Nagaland	320	3,555	13,160
8.	Orissa	24,056	2,40,257	79,320
9.	Tripura	2,152	5,001	1,140
10.	West Bengal	N.A	N.A	N.A
.....				
Total for Eastern States *		64,650	3,48,010	2,13,795

(\*) - Excluding Arunachal Pradesh & West Bengal.

(+) - Included in Assam.

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ANNEXURE-XXVII

COMMITTEE ON RURAL ELECTRIFICATION IN  
EASTERN STATES

REQUIREMENT OF MATERIALS FOR 1971-75

Sl. No.	States/Union Territories.	(M. Tons)		
		Aluminium for ACSR, ALG, Binding wire & Bus Bars.	Mild Steel for supports, foundations, base plate reinforcement etc.	Cement
1.	Arunachal Pradesh	N.A	.A	N.A
2.	Assam	1,653	1,913	7,090
3.	Bihar	3,729	12,300	7,838
4.	Manipur	126	422	156
5.	Meghalaya	+	+	+
6.	Mizoram	64	211	-
7.	Nagaland	64	711	2,632
8.	Orissa	3,977	30,474	12,691
9.	Tripura	75	213	144
10.	West Bengal	N.A	N.A	N.A
.....				
Total for Eastern States(*)		9,700	54,102	30,551

(\*) - Excluding Arunachal Pradesh & West Bengal

(+) - Included in Assam.

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VKW/SSR  
20.3.75.

# ANNEXURE XXIII

## PROGRESS OF VILLAGE ELECTRIFICATION IN THE COUNTRY AS ON 31.12.1974.

Sl. No.	States/Union Territories	Total No. of villages.	Number Electrified as on		% Electrified to total as on
			31.3.1974	31.12.1974	31.12.1974
1.	Andhra Pradesh	27,084	10,262	10,323	38.2
2.	Assam	20,565 (21,995) (*)	1,146 (*)	1,146 (*) (a)	5.2 (*)
3.	Bihar	67,665	9,775	9,838 (b)	14.5
4.	Gujarat	18,584 (18,275) (*)	5,638 (*)	5,889 (*)	32.2 (*)
5.	Haryana	6,669	6,669	6,669	100.0
6.	Himachal Pradesh	13,060 (16,916) (*)	4,500 (*)	4,682 (*) (b)	27.6 (*)
7.	Jammu & Kashmir	6,559 ( 6,503) (*)	1,380 (*)	1,619 (*)	24.9 (*)
8.	Karnataka	26,377 (26,826) (*)	12,644 (*)	13,393 (*)	49.9 (*)
9.	Kerala	1,573	1,375	1,375	88.5
10.	Madhya Pradesh	70,414	10,703	11,005	15.7
11.	Maharashtra	35,851	16,933	17,315	51.1
12.	Manipur	1,866 ( 1,949) (*)	213 (*)	213 (*)	10.9 (*)
13.	Meghalaya	4,407	137	137 (a)	3.1
14.	Nagaland	814 ( 960) (*)	136 (*)	155 (*)	16.2 (*)
15.	Orissa	46,466	8,466	9,644 (c)	20.8
16.	Punjab	11,947 (12,108) (*)	7,070	7,310 (*)	60.0 (*)
17.	Rajasthan	32,241 (33,305) (*)	5,778 (*)	5,914 (*)	17.7 (*)
18.	Tamil Nadu	14,124	13,805	13,822	97.8
19.	Tripura	4,932	103	111	2.2
20.	Uttar Pradesh	1,12,624	22,765	30,386	26.9
21.	West Bengal	38,454	6,700	9,309	24.2
.....					
Total (States)		5,62,276	1,55,214	1,61,267	28.6
-----					
Total (U.T.'s)		4,602	1,056	1,111	24.1
-----					
Total (All-India)		5,66,878	1,56,270	1,62,378	28.6

(d) As on 31.3.1974

(b) As on 31.10.1974

(c) As on 30.11.1974

(\*) As per 1971 Census.

PROGRESS OF VILLAGES ELECTRIFIED IN THE  
COUNTRY AS ON 31.12.1974

Sl. No.	Union Territories.	Total No. of villages.	NUMBER ELECTRIFIED AS ON 31.3.1974	31.12.1974	% electrified to total as on 31.12.1974
1.	A & N Islands	399 ( 390 ) (*)	41(*)	47(*)	12.1(*)
2.	Arunachal Pradesh	2,451	59	62	2.5
3.	Chandigarh	31 ( 26 ) (*)	26(*)	26(c)	100.0(*)
4.	D & N Haveli	72 ( 72 ) (*)	13(*)	20(c)	28.0(*)
5.	Delhi	276	276	276	100.0
6.	Goa, Daman & Diu	245 ( 409 ) (*)	235(*)	277(c)	68.0(*)
7.	Lakshadweep	10 ( 10 ) (*)	9(*)	(c)(c)	90.0(*)
8.	Mizoram	730 ( 229 ) (*)	5(*)	5(*)	3.2(*)
9.	Pondicherry	388	388	388	100.0
.....					
Total (U.T.s)		4,602	1,056	1,111	24.1

FIGURES PROVISIONAL

(c) As on 30.11.1974

(\*) As per 1971 Census.

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PROGRESS OF IRRIGATION PUMP SETS/ TUBEWELLS ENERGISED  
IN THE COUNTRY AS ON 31.12.1974.

Sl. No.	States/U. Ts	NUMBER ENERGISED AS ON	
		31.3.1974	31.12.1974
1.	Andhra Pradesh	2,61,939	2,71,426
2.	Assam	705	705(a)
3.	Bihar	96,922	99,754(c)
4.	Gujarat	1,02,623	1,11,230
5.	Haryana	1,27,947	1,34,444
6.	Himachal Pradesh	1,032	1,148(c)
	Jammu & Kashmir	402	411
8.	Karnataka	1,89,688	2,02,247
9.	Kerala	37,661	40,421
10.	Madhya Pradesh	1,38,304 3,42,265	1,57,496
11.	Maharashtra		3,71,527
12.	Manipur	Nil	Nil
13.	Meghalaya	Nil	Nil
14.	Nagaland	1	1
15.	Orissa	2,759	3,021
16.	Punjab	1,29,566	1,37,653
17.	Rajasthan	74,696	83,776 7,00,453
18.	Tamil Nadu	6,81,250	
19.	Tripura	40	40
20.	Uttar Pradesh	2,33,640	2,40,091
21.	West Bengal	6,535	6,789(b)
	Total (States)	24,21,893	25,70,695
	Total (U. Ts)	13,509	14,430
	Total (All-India)	24,41,602	25,85,061

(a) - As on 31.3.1974

(b) - As on 31.9.1974

(c) - As on 31.10.1974